LINGUISTIC PROFILES OF PRAGMATICALLY DISORDERED CHILDREN: THREE CASE STUDIES

By

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A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

1988

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This research is dedicated to the memory of my mother, Mrs. Lily Mae Coleman, who died on August 13, 1986. She made noble sacrifices throughout my entire life in the hope that her children would enjoy a better standard of life than she had. From 1954 when she sat by the light of a kerosene lamp washing one of my two dresses so I could look nice in school, until 1986 when she hid the seriousness of her illness from me for fear that I would abandon this effort, I remember her determined efforts to ensure my happiness and that of her other children.

It was Mother's dream to live long enough to see me reach this milestone. One of my most cherished memories is the smile upon her face when she learned that I had decided to embark upon this endeavor, and one of my most painful recollections is the sadness of her countenance when she realized that she would not be able to see me finish it.

I am grateful for every floor Mother scrubbed, her toil in the hot sun, the neglect of her needs so I could have the things I needed, each humble job she accepted in order to buy food for her children, and for the times, when all else failed, she begged for food and clothing for her children. Mother through her integrity, strength, and perseverance left an unforgettable legacy to me. The thought of her sacrifices has encouraged me to persevere through many dismal periods. For that I shall be eternally grateful.

ACKNOWLEDGEMENTS

I gratefully acknowledge the contributions of my mentor, Dr. Linda J. Lombardino, to this research effort. Dr. Lombardino provided valuable technical advice and moral support during my matriculation at the University of Florida. I also appreciate the support given me by the other members of my supervisory committee: Dr. Thomas Abbott, Dr. Vivian Correa, and Dr. Alice Dyson. Dr. Abbott valiantly waded through administrative technicalities while aiding me in my effort to finish this project and ensuring my happiness in my future employment setting. Dr. Dyson and Dr. Correa gave unwavering support in all of my endeavors. Each of them was a great source of inspiration for me.

Special thanks are extended to the following very dear friends for their sacrificial love and support throughout this project: Dr. D.R. Williams, Mrs. Jamie B. Stappell, Miss Laverne Q. Crawford, Mrs. Idella R. Dash, Mrs. Jean Avery, Larry and Janice Palmer, and Sherry and Herbert Dupree. I appreciate the support of Dr. Harold Powell and my colleagues at South Carolina State College. I am also grateful for the support of my family; the townspeople of Lake View, South Carolina; and my friends at Williams Temple Church of God in Christ, Gainesville, Florida and at Faith Tabernacle Deliverance Temple, Orangeburg, South Carolina.

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Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
Requirements for the degree of Doctor of Philosophy

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December 1988

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Major Department: Speech

Research in the area of discourse development has focused primarily on descriptions of early language behaviors in speakers from exemplary backgrounds. Few attempts have been made to systematically investigate the conversational behavior of children who are language impaired. Most research efforts in the pragmatics domain of language disorders have focused on examining selected aspects of conversational performance. Little emphasis has been placed on evaluating the multiple dimensions of pragmatics in language-impaired children. Conclusions drawn based on studies of isolated conversational skills may be different if these same skills were examined as part of the child's overall linguistic performance.

The purpose of this study was to conduct detailed analyses of the linguistic behavior of children who had been identified as poor conversationalists, in an attempt to describe and isolate the specific pragmatic variables that are impaired and to develop profiles of a small number of pragmatically disordered children. In contrast to previous research that had focused on selected aspects of pragmatics, this study examined all domains of language. The results of this investigation indicate that there are multiple patterns of pragmatic deficits and that language-impaired children can have a pragmatic deficit in specific areas but not in others. Findings also revealed that weaknesses in other areas of language may contribute to the perceived severity of the pragmatic disorder.

CHAPTER I
INTRODUCTION AND REVIEW OF THE LITERATURE

Introduction

General Statement

Human communication in its broadest meaning is the act or acts that produce some kind of response between two or more persons. Because this is true, then those persons must clearly understand each other, or the response may be far from what is expected (Bangs, 1968). Perhaps that is the reason effective communication has been an area of concern for mankind since the beginning of recorded history. Much of that concern has focused on oral communication. An Egyptian essay, written on parchment around 3000 B.C. and addressed to the son of the pharaoh, contained some elementary advice on effective speaking. During the fifth century, B.C., several interesting theories concerning effective public speaking were developed by Greek philosophers (DeVito, 1984). This fascination with oral communication skills has persisted into the twentieth century.

One aspect of oral communication that has received considerable attention within the past three decades is language development in children. Several disciplines have combined efforts that have yielded an impressive volume of information concerning how language is acquired. Most recently, much of this research has focused on the acquisition of conversational skills. Although conversation is a universal human activity performed routinely in the course of everyday interactions with our fellow beings, the nature of conversational speech and the means by which children learn to participate in conversations are still poorly understood. We have some ideas about what constitutes a well-formed and well-performed conversation and can recognize at least gross deviations from these (McTear, 1984). Recent investigations have yielded results that identify the specific skills involved in normal conversations of children and of adults. Additional studies have focused on how these skills are acquired (Bedrosian & Willis, 1987; Chapman, 1981; Coggins & Carpenter, 1981; Dale, 1980; Dunn & Kendrick, 1982; Fey, 1986; Fivush & Slackman, 1981; Gallagher & Prutting, 1983; Lucas, 1980; Nelson & Seidman, 1984; Terrell, 1985). There are many questions yet to be answered, however, regarding the nature and development of discourse skills in children.

Citation of Related Studies

Many theories have emerged concerning the acquisition of language. One school of thought that has been widely accepted is the interactionist viewpoint that was presented by Bloom and Lahey (1978). In his discussion of this theory, Fey (1986) reported that language must be understood as a complex system involving three separate but highly interdependent knowledge bases: content, form, and use. Content consists of two kinds of knowledge: referential and relational. Referential knowledge involves the child's understanding of the particular objects, events, and relations that underlie the meanings of the words we use. Relational knowledge is the child's understanding of the roles that objects can play in the context of actions or states of affairs as well as the ways in which events can relate to one another. According to Fey (1986), much interest has developed concerning how this knowledge is acquired and the impact that this knowledge has on a child's ability to participate in on-going discourse. Children must learn how knowledge (content) and form (structure) interact to serve different functions in conversation.

Nelson and Seidman (1984) proposed that three components of conversational context would contribute to maintenance of dialogue: presence of objects, shared topic, and shared script knowledge. Nelson and Seidman discussed scripts as mental or cognitive representations of events that are familiar to an individual and the temporally related acts that typically characterize such events. According to Nelson and Seidman, conversation takes place around a shared topic. Conversational episodes are defined in terms of topic shifts, which begin and end each episode. Thus shared topics are necessary in order for dialogue to be sustained. They further stated that, in order to account for the variable potential of topics to sustain play-related discourse, we need to invoke the notion of the shared script. Additionally, they pointed out that when a script becomes the topic of play, it provides the structure within which a coherent sequence of activity and talk may proceed. Fey (1986) suggested that children can be encouraged to converse about things not present in the immediate context through the use of scripts. He further speculated that such activities enhance not only the child's command of language as a tool for communication of nonpresent events but also the child's use of language as a tool of thought.

Other research in the area of discourse skill development has yielded results that indicate that children who learn language normally acquire a variety of skills necessary for effective communication prior to entering school. These children are sensitive toward several parameters of nonverbal behaviors by the time they are three years old. Prinz (1982) reported that certain socio-cognitive aspects of development, such as symbolic play, role-taking abilities, social dominance and persuasion techniques, and presuppositional and referential communication skills, all contribute to pragmatic advancement at this early stage. Ervin-Tripp (1977) found that these children are capable of using both direct and indirect request strategies. Sachs and Devin (1973) reported that by the age of four, children are able to vary politeness depending on whether they are speaking to adults, peers, younger children, or baby dolls. Topicalization and turn-taking are two major aspects of discourse that continue to evolve during this period.

Fey and Leonard (1983) identified three patterns of conversational participation in children with specific language impairment. Children whose behavior is consistent with the first pattern are generally unresponsive in all types of social interactions relative to same-age normal language children. Children who fit the second pattern are generally more responsive to their social partners than are the children in pattern one. They are less likely to initiate conversational exchanges than are their normal language peers. These children can be described as responsive but nonassertive. Pattern three describes the behavior of specific language impaired children who assume the roles of both speaker-initiator and listener-respondent in a manner that is very similar to normal language children their own age. They do not, however, assume these roles in the same manner that is consistent with that of their peers.

They rely more on nonverbal means of encoding. They also seem to be limited in specific linguistic forms required to produce certain speech acts, such as the assertion of rules. Fey and Leonard (1983) reported that the most general conclusion, however, is that the population of specific language impaired children is no more homogenous with respect to pragmatic skills than it is with respect to semantic, syntactic, or phonological abilities.

Snyder (1976, 1978) found that language-impaired children appeared deficient in several aspects of pragmatics. They had difficulty generating linguistic performatives, encoding the most informative contextual element, and disengaging themselves from the immediate context. Gallagher and Darnton (1978) found that language impaired children revised their utterances in response to listener misunderstanding. The revision strategies they used, however, were different from those found in normal children and were not systematically related to their levels of structural knowledge. Gale, Liebergotti, and Griffin (1981) found that language impaired children's request for clarification patterns were qualitatively different from those of normal language-learning children of the same language stage. The language impaired children used more nonverbal requests and exhibited a restricted number of linguistic forms. Conti-Ramsden and Friel-Patti (1983) found differences in the discourse skills of language impaired children. These children participated in dialogue less often and produced more inadequate and ambiguous responses. Wiig and Semel (1984) reported that learning disabled children exhibit problems in the area of social perception. They fail to perceive, interpret, and appropriately use facial expression, gestures, and other body language.

Preschool children also have consistently shown certain error patterns in conversational interactions. Preschoolers have difficulty in managing interruptions and also do not have well-developed devices for acknowledging and terminating topics (Ervin-Tripp, 1979). Terrell (1985) suggested that they may experience problems gaining a turn in on-going discourse as a result of these difficulties. According to Terrell, children at this level find it difficult to monitor the conversation and determine the appropriate point to "jump in." They cannot monitor the speech of others and simultaneously remember their own contributions. Because of this deficiency, preschoolers find it more difficult to participate in multi-party interactions with adults and older children than in dyadic interactions (Ervin-Tripp, 1979). According to Terrell (1985), during the early stages of linguistic development children lack the specific devices for verbally terminating and initiating topics; therefore, their contributions are often viewed as irrelevant. As a result, they are sometimes ignored by older listeners (Ervin-Tripp, 1979). Topic introductions may also be unsuccessful (Terrell, 1985). These children do, however, have the skill to readjust when their topic introductions fail, and to make relevant and contingent responses to the topics on the floor (Prelak, Messick, Schwartz, and Terrell, 1981).

Shortcomings of Previous Investigations

The typical methodology used in data collection for conversational dialogues includes the observation of naturally occurring behaviors. According to Friel-Patti and Conti-Ramsden (1982), the goal of observational research is to gather samples of communicative behaviors that are representative of the subjects' actual response repertoire. They suggest that the adequacy of these samples depends in part on a series of decisions made by the investigator. These decisions involve the means of observing and recording, data collection procedures, physical facilities, the time of day, and the people involved other than the subjects themselves. Furthermore, according to Friel-Patti and Conti-Ramsden, once the data have been collected, they must be analyzed in a manner that seeks to maximize objectivity and minimize examiner bias or subjectivity. They stated that of particular importance in the study of children's conversational discourse are the decisions made concerning the children's behavior and contextual notations.

Furthermore, according to the writers, in studying atypical populations such as language impaired children, one is confronted with the same methodological problems as those with normal children. Problems arise given the large range of performance of language-impaired children with changes in the conditions under which their behavior is observed. Friel-Patti and Conti-Ramsden warned that caution must be exercised when interpreting the results of language-impaired children's dyads in specific situations as they may not be representative of the full repertoire of the dyad. The results obtained in only one condition may seriously underestimate the communicative abilities of these dyads.

Friel-Patti and Conti-Ramsden (1982) reported that children's styles of interaction from situation to situation were different. Although the style of interaction for children with normal language was stable, the style of interaction of language-impaired children was not. The researchers felt that the effect on language-impaired children's performance would be similar when other aspects of data collection are manipulated. Friel-Patti and Conti-Ramsden (1982) concluded that there clearly are problems involved in the data collection, transcription, and analyses of language-impaired children's discourse skills and that their cumulative effect raises questions specific to the population of atypical language learners. They suggested that further research with language-impaired children should aim to tighten the methodological decisions.

According to Fey (1986), there is considerable variation in the rate, sequence, and pattern of language development in normal children. Normative data are usually gathered on very small samples of children, and these children generally come from exemplary backgrounds. They are observed over long periods of time in a variety of contexts. Fey pointed out that these same procedures are generally not used when studying language-impaired children. In fact, very little developmental data is available about the conversational skills of language-impaired children. The data that have been gathered often do not reflect more than one context of conversational participation. The results obtained from the studies of normal language children are used as a data base to indicate what is normal for the general population even though they are generally gathered on a very small sample of children and on limited variables at any one time. These data are commonly accepted as regular targets or goals in intervention. Until more extensive research is done on a wider segment of the population and on overall conversational skills, a question remains as to whether there are differences between various groups of children, or if there are specific patterns that may be considered deficits that need to be targeted for remediation.

Several researchers have suggested formats for assessing certain aspects of language use (Chapman, 1981; Coggins & Carpenter, 1981; Prutting, 1982; Simon, 1984; Gallagher & Prutting, 1983; Keenan & Schieffelin, 1976; Bedrosian, 1985). According to Fey (1986), even when pragmatic factors are considered, the children's skills are tested outside typical contexts, and consequently the children's true linguistic abilities are distorted. Comparisons of a child's performance with those of other children are not likely to be valid and reliable when the validity and reliability of the instruments and/or procedures used to measure specific skills are not well established. Because most of the research in the area of pragmatics has suffered from the same methodological problems that have plagued language research in general, there is a lack of an appropriate or complete data base from which to draw information when making assumptions about the conversational adequacy of children from diverse backgrounds.

Friel-Patti and Conti-Ramsden (1982) reported that research with language-impaired children has typically lagged behind that of normally developing children and has often been fragmentary. They speculated that this has resulted from the fact that investigations with atypical language learners tend to look at skills in particular tasks at a particular moment in time rather than looking at patterns of behavior over time. Further, they stated that there has been little developmental emphasis on research with language-impaired children beyond the one-word stage. The approach to the study of discourse abilities of preschool language-impaired children has generally been to select a group of language-impaired children and compare them with chronological age-mates and/or MLU matches. There has been no systematic attempt to discover developmental patterns in the language-impaired population. In addition, Friel-Patti and Conti-Ramsden pointed out that research with this population has been limited in scope (only a few aspects of discourse have been examined) and limited by the methodological problems previously discussed.

Purpose of the Study

The development of discourse skills is currently a popular area of study in language. Bedrosian (1985) and Craig (1983) reported that there has been a strong theoretical shift from syntactic and semantic models of child language acquisition to communicative or discourse models of language acquisition during the last decade. According to Bedrosian (1985), this theoretical shift has also been evident in the area of language disorders. Information on how normally developing children develop conversational skills is just emerging. It is almost nonexistent for language-impaired children (VanKleeck & Frankel, 1981).

The majority of the research in the area of discourse development has focused on descriptions of early language behaviors of speakers from exemplary backgrounds. Few attempts have been made to systematically investigate the conversational behaviors of children from diverse backgrounds or of children who are language-impaired. Very small samples of children have been used to examine selected aspects of conversational performance. It is possible that assumptions made based on studies of isolated conversational skills may be quite different if those skills were examined as part of a child's general conversational abilities. This study examined children's conversational skills in different contexts in response to three different elicitation strategies: "Script-Based Play," "Elicited-Schemes Play," and "Barrier-Task Play."

According to Wanska, Bedrosian, and Pohlman (1986), over a period of years investigators have documented the effects of materials or physical context variables on the syntactic performance of children. They reported, however, that only a few studies have examined the effect of these variables on pragmatic performance. Few, if any, studies have performed detailed analyses on single subjects in order to describe and isolate the specific pragmatics variables that are impaired.

The purpose of this study was to do in-depth analyses of the conversational behavior of young children who have been identified as poor conversationalists in an attempt to describe and isolate the specific pragmatic variables that are impaired. The researcher developed indepth profiles of children who had pragmatic problems in order to quantify and qualify the nature of pragmatic disorders and to examine pragmatics in relation to other dimensions of language including phonology, semantics, and syntax.

Review of the Literature

The vast amount of literature available on the topic of language development in children is beyond the scope of this study. The impact that the study of pragmatics has had on language research will be discussed under the general heading of Language Use in Children. Under this heading two areas will be addressed: the development of pragmatic skills in children and the effect of materials and physical context variables on conversational performance. The topic of conversational skills in the language-impaired population will be reviewed under the heading of Discourse Development in Language-Impaired Children. Some concerns about research and assessment methodology will be discussed under the heading of Research and Assessment Issues. A rationale for conducting an extensive analysis of conversational skills in children who have been identified as having pragmatic disorders will be presented under the heading of Statement of Need.

Language Use in Children

Most recently the shift in the study of language development and disorders in children has been toward the study of the pragmatic aspects of language. Prutting (1982) stated that the contemporary term, pragmatics, has its origin in an early Greek word that meant action. Greek philosophers such as Plato and Aristotle were interested in the relationship between the speaker and the audience. Prutting concluded that rhetoric, therefore, may be thought of as the earliest form of contemporary pragmatics. Bates (1976) is generally given credit for introducing the term pragmatics into the field of speech-language pathology. Researchers now realize that in addition to learning the semantic, syntactic, and phonologic rules of language, a child must also master the rules that underlie how language is used for the purpose of communication (Hymes, 1971; Roth & Spekman, 1984).

A child acquires language because of its usefulness. Even before children learn to talk, it becomes apparent to them that communication can be a valuable tool. Pragmatics is concerned with how and why the speaker uses language, what the purposes are, and what the speaker hopes to accomplish through different utterances (Nation & Aram, 1984). The definition of pragmatics that is used most often is based on the semiotic theory (Morris, 1938). According to Morris, pragmatics presupposes both syntax and semantics. During the evolution of transformational grammar, Morris made many contributions to the study of language use. The transformational grammar era dominated the study of linguistics for many years. It was only in the decade of the 1970s that there was renewed general interest in the study of pragmatics. Two researchers made significant contributions during the 1960s that helped to usher in this period of renewed interest in the use of language. Austin (1962) suggested that the speech act is the basic unit of pragmatics. He explained the speech act as a linguistic communication between a speaker and a listener. Austin described the speech act process as consisting of three phases: locutions, illocutions, and perlocutions. The most advanced of these phases is the locutionary act, which consists of the utterance of words plus the proposition or content of the message. Searle (1969) also discussed the importance of speech acts in communication. He said that the speech act is composed of the doing aspect (utterance act), the meaning aspect (propositional act), and the function (illocutionary act).

Johnson, Johnston, & Weinrich, (1984) reported that a review of literature in speech-language pathology identified a number of pragmatic functions that must be correctly coordinated if language is to serve as a useful tool.

Language must be appropriate to the context and the listener, be polite enough, provide sufficient information, be relevant to the situation, and have sufficient truth value (Grice, 1976). In addition, Johnson and her colleagues (1984) stated that language must incorporate the expected rules for discourse -- establishing topic, maintaining conversation, using appropriate register, and signaling pragmatic information by using specific syntactic forms. According to Bloom and Lahey (1978), if a child can produce generally appropriate and meaningful discourse, his or her language will function as a useful tool. They explained that the child will be able to use language to do such things as ask and answer questions, give directions, comment on problems, suggest actions, give orders, speculate, joke, argue, and eventually to use the higher literary and argumentation forms of the adult world.

According to Roth and Spekman (1984), a large number of clinical reports have indicated that language-impaired children with disabling conditions demonstrate major communication deficits that transcend their problems with form and content or that exist even in the presence of normal linguistic skills. The writers speculated that problems exhibited by these children illustrate that linguistic knowledge alone does not guarantee appropriate language use. Ochs (1979) stated that expanding the study of child language to include pragmatic dimensions enables us to see the variety of communicative skills the young child uses in everyday social situations. This, she suggested, in turn provides a richer and more accurate account of the child's linguistic and social knowledge. Damico and Oller (1980) reported that teachers were able to identify language disordered children more readily by using pragmatic criteria than they could by using morphological/syntactic criteria. They further reported that results from many studies show that even persons who are untrained in linguistics make less reliable judgments about discrete points of surface form than they do about more global aspects of communicative effectiveness. Investigations in the area of pragmatics have focused primarily on three aspects of communication skills: communicative intentions, presupposition, and social organization of discourse. Several variables represent the essential components of discourse and may serve to guide a clinician's observations in this area. These include topic maintenance, on-topic exchanges, topic termination, and conversational repairs (Roth & Spekman, 1984).

Communicative Intentions

Bates (1975) examined the onset of intentional communication before speech begins and traced it to the very first uses of gestures as forms of intentional communication. Much of Bates' early work was based on that of philosopher J. Austin (1962). Bates followed the development of language through Austin's three stages. Two precursors to the first functional uses of speech were defined: protodeclaratives and protoimperatives. Halliday (1975) talked about language as "doing" and language as "learning." He proposed eight communicative functions of language: instrumental, regulatory, interactional, personal, heuristic, imaginative, representational, and ritual. He also suggested that there are three distinct phases of pragmatic development. Dore (1975) described children's one-word utterances as primitive speech acts. He described how intentions emerge and contribute to the child's acquisition of words. Dore also discussed the idea of language universals and suggested that all language can be analyzed in terms of these fundamental notions. He developed an elaborate scheme for coding what he called conversational acts in the speech of young children.

Roth and Spekman (1984) suggested that at the level of communicative intentions, it is important to analyze both the range of intentions understood and expressed as well as the verbal and/or nonverbal forms in which they are coded. They claimed that the analysis of intention may be approached in several ways. First, one can examine whether a child uses gestural, paralinguistic, and/or linguistic means. Second, the linguistic structures used to convey an intention can be analyzed. According to Roth and Spekman, a classification system of semantic relations can be employed for a young language learner. For a more syntactically advanced child, messages can be coded for sentence types. A third approach involves an examination of the degree of explicitness with which an intention is expressed.

Wells (1974) categorized speech acts in relation to the parameters that control the intents and forms used. In his system, speech acts are categorized within each of the following functions of communication: ritualizing, informing, controlling, feeling, and imagining. He pointed out the critical importance of the infant's physical and verbal environments. Wells suggested that the meanings that the child constructs prelinguistically are heavily dependent upon the direction of his focus of attention by caregivers.

Babies engage in various forms of eye contact with their mothers (Argyle & Ingram, 1972 cited in Prutting, 1979). These acts seem to signal intent, readiness, and turn-taking. Coggins and Carpenter (1978) defined a set of eight pragmatic categories identifiable in preverbal children. Beginning at about 9 months of age, children have been found to use a variety of intentions that they express through gestures and early vocalizations. Several researchers have identified a set of these early communicative behaviors (Bates, Camioni, & Volterra, 1975; Escalona, 1973; Halliday, 1975). The first gestures of infants that are consistent with the gestures of the community include showing, giving, and pointing. Subjective sensorimotor pointing leads to communicative pointing (children use objects to obtain attention from adults) (Bloom & Lahey, 1978). Infants gradually progress to communicating with intention to communicate in the second half of the first year. Although still unable to use the conventions of language, infants come to know that their behavior can influence the behavior of others, and they behave with the intention of achieving that influence (Bloom & Lahey, 1978). Coggins et al. (1987) reported that by 12 months most subjects were able to establish joint reference and direct their parents' attention to interesting sights or sounds. DeVilliers and DeVilliers (1978) found that by the time a child is 12 months old, he can engage another person's attention through gestures and eye contact to indicate what he needs. According to Chapman (1981), studies typically fail to find examples of intentional communicative vocalization until about 9 to 12 months, or sensorimotor stages 1 and 2. Beginning at about 9 months of age children use a variety of intentions that they express through gestures and early vocalizations. Some of the preverbal communicative intentions that have been identified are attention seeking, requesting, greeting, transferring, protesting/rejecting, responding/acknowledging, and informing (Roth & Spekman, 1984). According to Prinz (1982), the specific categories of communicative interactions that occur between 6 and 12 months are: participation in routine games, requesting and rejecting objects, and commenting on events in the environment. Prinz further stated that participation in routine games, requesting objects or assistance, rejecting proffered objects or activities, and indicating an object to the mother or commenting on its appearance are common to 9 to 12-month olds.

Dore (1974) identified several early communicative behaviors: labeling, answering, requesting, calling, greeting, protesting, repeating, and practicing. Tough (1977) was primarily concerned with the roles that language plays in problem-solving and thinking. Tough devised a system of categorization of communicative functions and intents that views language from a cognitive-semantic perspective. Within this system, four major functions of language are identified: directive, interpretative, projective, and relational.

According to Roth and Spekman (1984), the clinical assessment of communicative intent involves gaining some idea of 1) the types of intentions comprehended and expressed, 2) the linguistic forms of intention comprehended and expressed, 3) the nonverbal and paralinguistic means for communicating intent, and 4) the social conventions that govern interpretation and selection of particular linguistic and nonverbal forms of intention.

Presupposition

Assessment in the area of presupposition focuses on the ability of children to take the perspective of their conversational partners. This skill is commonly referred to as role taking. The role taking skills necessary for communicative success typically must be inferred from the linguistic, paralinguistic, and extralinguistic modifications that children make when communicating with different partners, in different situations, and for different purposes (Roth & Spekman, 1984). Greenfield (1979) reported that children at the single-word level are not necessarily aware of the listener's perspective, of what might be "old" or "new" information for the listener. She further stated that the power of a process of information extraction common to child and adult is that it can make verbal communication between a child and an adult possible long before the child has developed any such awareness of the listener's point of view.

According to Bloom and Lahey (1978), the learning of the social conventions for the uses of language begins in the third year but continues through adulthood. Early development includes use of presupposition, listener-role, conversational discourse between speakers, and forms of reference, deixis, and ellipsis. Bloom and Lahey believe that children between 3 and 4 years of age can modify form and content of their speech according to what they presume that their listener knows. Among the indicators of the child's ability to take account of the listener's orientation are: existence of relative clauses, presence of identifying adjectives, use of orienting terms and transition indicators, and adjustment of language complexity (Lund & Dunchan, 1983). Four-year-old children have been found to modify their speech as a function of the age of the listener. These children produce fewer, shorter, and less complex sentences when speaking to 2-year-olds as compared to adults (Shatz & Gelman, 1973, cited in Prutting, 1979).

Presupposition and inference can account for distinguishing between old (or given) and new information, retrieving information deleted from elliptical utterances, determining the referents of pronouns, and creating information by combining elements from more than one source. Conversational inferences occur when an individual assesses another person's intentions and responds appropriately. Inferring involves the ability to accurately evaluate the social, cognitive, and communicative dimension of a situation and then appropriately assign propositional and illocutionary meaning to the utterances. One source of conversational inferences is prosodic and paralinguistic features (Rees, 1982).

Rowan, Leonard, Chapman, and Weiss (1983) did a study in which the presuppositional and performative abilities of language-disordered and normal children were compared, controlling for the children's ability to use the lexical items required in the experimental tasks. Results revealed that both the language-disordered and the normal language children showed a tendency to encode changing rather than unchanging situational elements. The two groups of children also demonstrated similar levels of imperative and declarative performative intent. DeVilliers and DeVilliers (1978) cited Volterra (1973) who reported that children between 1.5 and 2 years are aware of the rules for simple negations. This ability, they asserted, is one of the best proofs of presuppositions. A speaker must be able to adjust the form and content of an utterance according to the situation and the listeners. The formality of the situation; the relative social status of speaker and listener; the age, sex, and culture of the communicative participants; and the purpose of the communication are factors that must be considered by the speaker in order to be effective. Bloom and Lahey (1978) cited Smith's (1933) study in which children were observed to ask significantly more questions when they were interacting with adults than when they were interacting with their chronological age peers. By the age of 3, children can make reference to absent persons and events (DeVilliers & DeVilliers, 1978). Bloom, Lightbrown, and Hood (1975) reported that when MLU was about 2.5, children knew that it was possible to use both nouns and pronouns in reaction to verbs.

Roth and Spekman (1984) pointed out that, because there are currently no formalized coding systems available that address different aspects of role-taking, the clinician will want to be sensitive to the informativeness of a child's messages as well as to variables related to the social context. They suggested that to evaluate this aspect of a child's message, the following questions can serve as guidelines: What does a child choose to talk about in a given situation? Does the child encode what is novel or merely comment on what is already given or known? Does the child encode new information gesturally and/or linguistically? Are messages informative, vague, or ambiguous? Are different referents clearly established for the listener? Does the child talk differently about objects or events present in the environment than about those not present?

In addition to examining message information, presuppositional abilities may be reflected in linguistic devices, including dietics, indirect/direct reference forms, and other forms of cohesion. Because the use of deixis and indirect/direct reference is always bound to the particular contexts in which it occurs, definitive developmental milestones cannot be given. In fact, even adults frequently use these terms incorrectly. Therefore, the purpose of assessing these abilities is to obtain descriptive information about dimensions of role-taking skills (Roth &

Spekman, 1984). Presuppositional abilities can also be assessed by asking children to describe a movie, retell a story, or describe how a toy works. These formats provide units of extended discourse that can be analyzed for introduction of referents and instances of deixis and cohesion. Finally, a variety of role-playing activities can be developed to examine role-taking abilities (Roth & Spekman, 1984).

Topicalization

Topicalization involves the selection of a topic by the speaker and the specification of that topic in sufficient detail so that the listener will be able to follow. The amount and type of topic specification required will be a function of the amount of shared information that the speaker and the listener can assume at a given moment in conversation. The degree of topic specification required may also influence the selection of the topic. In general, however, topic selection emerges out of the flow of previous discourse (Bates & McWhinney, 1979). What determines topic selection when there is no given element? Bates and McWhinney (1979) suggested several factors. First of all, when all the elements in a proposition are equally novel, speakers are particularly likely to choose as the starting point the element with the greatest similarity to the speaker. Secondly, topic selection is motivated by some combination of at least three intentions; giveness, perspective, and salience. Further, when the topic is old information, definite articles and demonstratives are devices typically used in topic specification. When, instead, the topic is new information, indefinite articles and quantifiers are more likely to be used. According to Bates and McWhinney (1983), hierarchical structuring and course of topicalization in discourse may include the following: initial greeting, openers, logical development of the topic, resolution of the topic, and closing remarks or termination of the topic.

Topic coherence involves the ability to relate utterances through the use of meaningful and structural ties. Utterances can be tied to the previous speaker or to the current speaker's own utterances. Topic continuation involves the ability to maintain a topic, to elaborate on a topic, or to introduce new topics with appropriate topic shifts. Halliday and Hasan (1976) suggested that utterances can be tied together through the use of structural links they termed cohesive devices. Keenan and Klein (1975) described multiple strategies used by a set of twins during the early preschool years to sustain interaction and topical focus in child-child conversations. These strategies included simple repetition of the previous speaker's utterance, affirmation or denial of the previous utterance, repetition of the previous utterance with a change in a single linguistic or paralinguistic feature, extension of the previous utterance by predicating something new, and including ties such as anaphoric pronouns, conjunctions, and ellipsis. Conversational structure consists of openings (greetings and exchange of amenities), topic discourse (exchange of information about the topic, each taking turns in an orderly way), and closings (Lund & Dunchan, 1983). Sinclair and Coulthard (1975) discussed three categories of utterances: initiations, responses, and feedback. Initiations are those utterances in which the child predicts or expects a response. The response is an utterance in which there is a fulfillment of the expectations of a preceding utterance. Feedback is a response type in which neither of the above occurs but where there is a reaction to the preceding utterance.

Brinton and Fujiki (1984) investigated the manipulation of discourse topic in spontaneous conversation in three age groups. They found that the number of topics introduced and reintroduced in the sampling period decreased with age, whereas the proportion of topics maintained increased with age. Topic shading also increased with age. A topic was considered to be shaded when the topic focus is not strictly maintained, and while some aspect of the current propositional content was derived from the preceding utterance. Topic shading may occur in an utterance that either adds or requests information.

According to Prutting (1979), one characteristic of a child around 2.5 years old is that there is rapid topic change throughout the discourse. Bloom and Lahey (1978) suggested that one of the earliest techniques for monitoring discourse exchanges begins when children seek to establish that someone is listening before they begin to talk. They reported that the use of the vocative to gain the attention of a listener before continuing with an utterance has been observed often among 2-year-olds. Prutting (1979) cited a study by Bloom, Rocissano, and Hood (1976) in which they found that somewhere around 3.5 years the child acquires an ability to maintain a topic over adjacent successive utterances. Rees (1982) cited studies by Keenan (1974) and Garrad (1979) in her conclusion that children in their third and fourth years use devices like anaphoric pronouns and ellipsis to relate their conversational contributions to prior linguistic materials. Somewhere between the age of two and three years the child learns to produce utterances that are relevant to preceding adult utterances, not only on the basis of intimate context, but on the basis of the actual linguistic content of the adult's utterance. The child is able to repeat part of the adult's utterance to respond, answer questions, use deixis, and appropriately substitute pronominal forms for previously introduced nominal forms (McLean, Snyder-McLean, Sack, & Decker, 1981).

Context

The examination of context requires attention to characteristics of the listener, the communication channels available, and the environment in which an interaction takes place. A wide variety of audience variables warrant attention including age, status, level of familiarity, cognitive level, linguistic level, and shared past experiences. To examine a child's appreciation of the physical context, researchers might ask: Does the child make modifications that reflect an awareness of the channels available for communication? An additional question might be: Does the child recognize that rules governing behavior may change in different social environments such as home, playground, and classroom? (Roth & Spekman, 1984). Camaioni (1979) argued that a thorough study of conversational competence must consider, not only dialogue exchange as such, but also the physical, social, and cultural context in which the conversation takes place. Ochs (1979) stated that context includes minimally the language user's beliefs and assumptions about temporal, spatial, and social settings; prior, ongoing, and future actions (verbal, nonverbal); and the state of knowledge and attentiveness of those participating in the social interaction at hand. According to Scollon (1979), the earliest stage of language has traditionally been taken to be when an uninitiated speaker of the adult language can clearly understand sentences spoken by the child without reference to the context. Scollon claims that this stage can be pushed back to an earlier age when the adult speaker's understanding is enhanced by interaction with the child and by close attention to the contextual detail in tape recordings.

Researchers seem to agree that the scope of context is not easy to assess and define. Ochs (1979) stated that the researcher may have access to the immediate physical environment in which communication takes place, and may have access to the verbal environment in which a verbal act is couched. However, she asserts that although these dimensions of context are significant, they do not exhaust the range of utterance-external variables that affect the use and interpretation of verbal behavior. Ochs further stated that in order to assess the import of a language user's behavior, one must consider the social and psychological world in which the language user operates at any given time. She suggested that this world is shaped both by culture-specific values and expectations, and by cultural and interactional processes that affect language users across cultures and languages. According to Ochs (1979), what we have learned about child language and context lies outside the scope of any one field. It draws on insights achieved in several fields, including psychology, anthropology, sociology, linguistics, and philosophy. She concluded that accounting for context is an awesome task, and that researchers are reluctant to attend to levels of context that the methodology of their field excludes. A consequence of this, in turn, is that researchers have been unable to develop a unified theory of pragmatics.

According to Bloom and Lahey (1978), speech acts that include different message content in different contexts, such as requesting an action, requesting permission, warning, inviting, or promising, are a later development; they usually appear in the later preschool years (ages three to five years) but continue to develop and change into adulthood as the individual encounters new and different contexts. Schwartz, Messick, and Pollock (1983) defined pragmatics as the study of language use as a function of context. They stated that contextual influences include characteristics of the conversational participants as well as characteristics of the particular communicative situation. According to Schwartz and his colleagues, a number of studies have demonstrated that both normal and speech impaired children vary phonetic aspects of production in relation to various contextual factors. Ochs (1979) concluded that context cannot be ignored by language users. She stated that to be competent, a language user must know the multitude of norms for adapting language to the situation at hand. According to Chapman (1981) and Rees (1982), discourse has to do with the role that utterances play in their contexts. This involves how utterances operate to open, maintain, or close conversations; how utterances fulfill the expectations set up by the previous speaker utterances; and how utterances serve to clarify, or change the topic of conversation.

Prutting (1982) stated that context is the interrelated conditions in which something exists or occurs. She discussed several dimensions of context. The cognitive and social context involves the knowledge of the physical world including the setting, the communicative partner, and the rules of interaction. The physical context is concerned with the perceptual properties of people, places, and objects. The linguistic context involves the prior, co-occurring, and past verbal behavior used in composing and interpreting communication. Nonlinguistic context is concerned with the nonverbal and paralinguistic behavior in generating and interpreting meaning. The linguistic and nonlinguistic dimensions are specifically involved in discourse.

Conversational Repairs

Conversational repairs involve the ability to recognize, indicate, and clarify unsuccessful utterances. The speaker must be able to recognize that a listener has not understood the intended message, determine the possible reasons for the breakdown, and clarify the message via elaboration, repetition, or paraphrase. The listener's responsibility is to communicate to the speaker that the message has not been understood. He may use a number of verbal and nonverbal means such as questions and quizzical expressions.

One device used by listeners to alert speakers to that their messages are unclear is the contingent query (Garvey, 1977). The contingent query is a question addressed to the speaker which signals his immediately preceding message was unclear or that additional information is desired or needed in order for the message to be fully understood. Garvey identified four kinds of contingent queries used by three-to-five year-olds: nonspecific request for repetition, specific request for repetition, specific requests for confirmation, and specific requests for specification. Garvey found that children do not begin to use contingent queries productively until around three years.

James and Sebach (1982) investigated the pragmatic function of preschool children's spontaneously produced questions. Questions produced during these observation periods were categorized by pragmatic function. The major function of the questions produced by the two and three-year-olds was clearly information seeking, but the four- and five-year-olds' questions were more evenly distributed among the functional categories. The four-year-olds used a high percentage of conversational questions in comparison to the other age groups. The children's question use appeared to follow the principle of using new forms for old functions and old forms for new functions. Prutting (1979) cited a study by Gallagher (1977) who investigated children between the ages of 21-29 months with an MLU of 1.5 to 2.9. She found that all children responded to requests for revisions. She also found that these revision behaviors were systematic and that the type of change was a function of the child's linguistic sophistication.

Roth and Spekman (1984) discussed three major categories of revision strategies: linguistic structure, linguistic content, and extralinguistic factors. Linguistic structure includes phonologic, morphologic, lexical, and syntactic factors. Linguistic content involves such strategies as repetition, confirmation, specification, and elaboration. Extralinguistic factors include pitch change, stress, volume change, and demonstration. Terrell (1985) cited a study by Beal and Flavell (1983) in which they showed that children in preschool and kindergarten had difficulty rejecting listener's inaccurate statements regarding their comprehension of messages. This was true even when the children themselves were aware of the quality of the messages. First graders were able to use their evaluations of message quality to make decisions about whether or not listeners actually understood.

Turn-taking

According to Roth and Spekman (1984), there is a large body of evidence that demonstrates that very early mother-child interactions involve synchronous alterations of turn and temporally linked behaviors. Turn taking behavior is also seen in the highly ritualized and repetitive games played between mothers and their infant children. Roth and Spekman suggested that the presence or absence of turn-taking should be documented during assessment. In dialogue, infants very early discover the essentials of turn-taking, how to achieve affective synchrony in interaction with others, the capacity to predict the behavior of others, and the capacity to intentionally influence another's behavior (Bretherton, McNew, & Beegley-Smith, 1981). By the age of 14 months, children can initiate vocal turn-taking sequences with their mothers (Dunn & Kendrick, 1982). Ninio and Bruner (1978) reported that children aged 8-18 months produced nearly perfect turn-taking cycles. Bloom, Rocissano, and Hood (1976) noted that the child during the one-word stage shows the rules of turn-taking and systematically applies them in conversational exchanges with a partner.

The allocation of turns involves a knowledge of the rules used to initiate and coordinate the speaker's participation in conversation. Initiation involves the ability to begin a speaking turn as well as to provide opportunities for others to participate. It requires that conversational participants recognize turn requests, such as questions. Nonverbal cues and/or verbal statements may be used. Ervin-Tripp (1979) found that children between two and four years old produce more turn-relevant interruptions than younger children. Children over 4.5 were less likely to ignore overlaps and when interrupted they attempted to remedy the situation more often than younger children. It appears that turn-taking is an important and natural occurring phenomenon that may not be fully developed until the child is well advanced in general communicative abilities.

Requests

Garvey (1975) studied three-to-five year-olds' ability to respond to different forms of requests for action. Both 3.5 and 4.5 year-olds responded better than younger children to indirect requests, but 4.5 year-olds responded better than younger ones to indirect requests. Ervin-Tripp (1977) reported that preschool children use indirect forms like questions to make requests. James (1978) suggested that the use of indirect forms to achieve politeness is well developed by the time a child is five years old. Lund and Dunchan (1983) discussed Ervin-Tripp's (1977) study where a developmental sequence for directives was presented. Two year-olds use attention getting words along with gestures and rising intonation, request words, problem statements, and verbal routines. Three year-olds used modal forms (would you + request). Four year-olds used hints with a statement of the problem. Five year-olds made requests distinct from the intent ("Pretend this is my car").

Lund and Dunchan (1983) described an unpublished study by Lawson (1967) of a two-year old child who used different degrees of directness and politeness when making requests to peers as opposed to adults. According to Lund and Dunchan, the different strategies included embedded imperatives, permission statements, hints or implications, and manipulations. Children between three and five years old begin to produce indirectives or hints in their communicative exchanges (Ervin-Tripp & Kernan-Mitchell, 1977). Utterances such as "My mother always lets me have ice cream before lunch" are used to request indirectly rather than to inform (Prutting, 1979). When using directives, four and five year-olds are more polite when making requests than when commanding, and they include more polite markers when addressing adults and age peers than when addressing younger children (James, 1978). When addressing younger children, preschoolers demonstrate many of the characteristics of mothers' speech to children. They simplify their speech, use shorter and less complex sentences, use frequent repetition, ask more questions, use more attention-getting devices, and simplify their phonology

(Sachs & Devin, 1976; Shatz and Gelman, 1973). As they modify the style of their speech, children are not only aware of age differences in listeners but also of differences in developmental status. Bates (1971) suggested that comprehension of polite forms precedes production of them. "Please" and "intonation items" were reportedly recognized by the age of four. Sachs and Devin (1973) reported that four-year-olds varied politeness depending on whether talking to adults, peers, younger children, or baby dolls. In two experiments, Nippold, et al. (1982) examined children's use and understanding of polite forms and the relationships these abilities share with an ability to adopt the perspective of another. Development in the understanding of polite forms seemed best characterized as a sensitivity to the function of these forms in an increasing number of sentence types. Development in the use of polite forms could be viewed as an increasing tendency to produce more than one polite form in the same utterance and to use a wider variety of interrogative types when expressing politeness. Emergence of the use and understanding of politeness in speech at age three seemed related to an emerging ability to adopt the perspective of another. However, development of politeness beyond this age seemed related only to a form of perspective taking in which knowledge of social roles plays a part.

Discourse Skill Development of Language-Impaired Children

Lucas (1980) discussed five major areas of specific semantic/pragmatic disorders. Topical or referential identification problems are most significant with respect to asking and answering questions. Off-target responding occurs when a child is unable to scan the previous utterances or the surrounding context for appropriate referential possibilities. Topic closure difficulties occur when the child cannot determine the boundaries of his utterances in terms of ideas or topics. Boundaries are arbitrary divisions around ideas or semantic bits of information that a speaker wishes to convey to a listener. Pauses and other prosodic devices are used to linguistically mark the division between the boundaries.

Most children acquire the language of their environment with considerable ease. A significant minority however, acquires language slowly and with great effort. Children experiencing difficulties learning language often exhibit other types of handicaps that may relate or contribute to their problems with language. There is one group of language deficient children however, for whom this is not so clearly the case. These children manifest what has been termed specific language impairment (Leonard & Schwartz, 1985)). This condition is seen in approximately 1 of every 1000 children. A number of other terms have been used in the literature to refer to children with specific language impairment. These include: "delayed language," "infantile speech," "deviant language," "language disorder," and "congenital," "developmental," or "childhood" aphasia (Leonard & Schwartz, 1985). The term language-impaired will be used to describe this population of children throughout this research document. Although language-impaired children constitute a heterogeneous group, they share several key characteristics. These children show significant deficits in linguistic functioning although they have adequate auditory acuity, age-appropriate performance on nonverbal tests of intelligence, and the absence of gross neurological disability (Leonard & Schwartz, 1985).

According to Fey and Leonard (1983), children with language impairment have traditionally been identified on the basis of deficits in lexical and syntactic development, and studies attempting to provide a description of these deficits have focused on such factors as the modality that is most affected. Fey and Leonard stated that although the lexical and syntactic abilities of language-impaired children are still a major concern, investigators recently have broadened their perspective on language impairment to include not only considerations of linguistic form, but also of the ways in which language-impaired children use language. Several studies were reviewed by Fey and Leonard (1983) that examined the ability of language-impaired children to participate in conversation. Conflicting conclusions can be drawn from the results of the investigations cited. Fey and Leonard concluded that the population of language-impaired children is no more homogeneous with respect to pragmatic skills than it is with respect to any other aspect of language. Fey (1986) discussed three patterns of conversation identified by Fey and Leonard (1983) in an earlier study of the language-impaired population. Children were categorized as being either assertive, responsive, or neutral. Assertive children are highly verbal and tend to make functional use of the limited linguistic skills that they possess. Other language-impaired children are responsive to their conversational partners but are not likely to initiate conversations and/or topics. Children in the third group display general deficits in their patterns of social-conversational interaction. They are neither as assertive nor as responsive as children developing normally, and they exhibit a reduction in motivation to interact verbally with their social partners.

Craig and Gallagher (1986) investigated the potential relationship between interactive play and the frequency of related responding to comments within the dyadic interactions among a five-year old boy and normal language users. They found that the language-impaired boy's conversational behavior was different from that of his same-aged or language-similar peers. The data as a whole seemed to indicate that unlike normal language children whose frequencies of related responses were essentially stable, the language-impaired boy was more frequently able to produce a related response after the referent had been explicitly verbally identified by both he and his partner.

Fey and Leonard (1984) investigated partner age as a variable in the conversational performance of language-impaired and normal-language children. They found that the language-impaired subjects were as assertive as their same-age peers on all accounts, and that they demonstrated signs of being even more active, in general, than were the younger language-matched subjects. The researchers concluded that a general characterization of language impaired subjects as conversationally unassertive is, at best, premature and, at worst, incorrect. The language-impaired subjects also demonstrated the ability to modify their speech styles when speaking to different-aged partners in the same manner and to the same extent as the same-aged subjects in all areas except internal-state questions and utterance length and complexity. The investigators felt that their findings corroborated the results of Meline's (1978) and Skarakis and Greenfield's (1982) studies which showed that the typical higher cognitive, social, and language comprehension skills of language-impaired children may give them advantages on certain pragmatic tasks over normal language children who are roughly equivalent in expressive language ability.

Tomasello, Farrar, and Dines (1984) cited a study by Gallagher and Darton (1978) in which they found that language-impaired children have the ability to adjust their speech in response to listener feedback. The subjects revised their utterances with a high frequency, although the frequency with which they used different types of revisions was different from that of normal children in the same stages. They used mixed revision strategies. The strategies were not related to their levels of structural knowledge.

Van Kleeck and Frankel (1981) discussed a study in which Keenan (1975) concluded that their are two strategies operating during children's conversations. The focus operation is where one or more lexical items in an antecedent utterance is focused on and repeated in a subsequent utterance. These kinds of utterances require a minimal level of competence. The other strategy, substitution operations, involves repeating part of the antecedent utterance but replacing a lexical item. In substituting, the child begins to go beyond reproducing what he hears or sees. Like the adult, the child at this point begins to draw on his background knowledge to respond relevantly to some prior utterance. In a study of language-impaired children's use of these two devices through which utterances are related to ongoing discourse, Van Kleeck and Frankel (1981) reported that children who were at lower linguistic levels used more focus operations while the linguistically more mature child used more substitutions. Contrary to expectations, however, the language-impaired children were able to appropriately use substitution operations even at the lowest language level observed. In addition, a developmental trend was suggested because the use of substitutions was greatest for the child with the highest language level. Consequently, no noteworthy qualitative differences were apparent between normally developing and language-impaired children in the discourse devices analyzed.

Friel-Patti and Conti-Ramsden (1982) cited Snyder (1976, 1978) who developed a task to elicit declarative performatives, imperative performatives, and encoding of the most informative element in the context. Snyder found that language-impaired children were deficient in their ability to generate linguistic performatives, encode the most informative contextual element, and disengage themselves from the immediate context. Although both the language-impaired and the language-normal groups were similar in their nonverbal use of communicative behaviors expressing declarative and imperative functions, the language-impaired children were far less likely to express these intentions linguistically.

Most of the emphasis on discourse research with language-impaired children has not extended beyond the one-word stage. Friel-Patti and Conti-Ramsden (1982) stated that researchers who study the discourse abilities of preschool language-impaired children have generally selected a group of language-impaired children and compared them with their chronological age-mates and/or MLU matches. The writers pointed out that there have been no systematic attempts to discover developmental patterns in the language-impaired population. Additionally, they asserted that research with the language-impaired population is limited in scope and limited by various methodological problems.

Conti-Ramsden and Friel-Patti (1983) found quantitative differences in the amount of dialogue participation of language-impaired children and language-normal children of the same language stage. Specifically, the language-impaired children initiated dialogue and introduced topics less often than did the language-normal children. The researchers reported that qualitative differences in the type of responses used by language-impaired children in dialogues with their mothers were found. Language-impaired children had more inadequate and ambiguous responses to mother's initiations than did the language-normal children of the same language stage. Brinton and Fujiki (1982) found similar results in child-to-child interactions. Friel-Patti and Conti-Ramsden (1982) cited a study by Geller and Wollner (1976) in which they compared the speech act repertoires of three language-impaired children with those of age-matched subjects reported by Dore (1977). The language-impaired subjects were notedly deficient in the range of speech acts they used.

Donahue, Pearl, and Bryan (1980) and Donahue (1984) examined aspects of a model for responsive listening. In both studies, the child's task was to listen to a clue provided by an experimenter and then select one of four pictures of the same object, which differed in varied features. Some messages were completely informative, providing enough details for the child to identify just one picture. On the other trials, the experimenter created a communicative breakdown by giving general clues that applied to two pictures or to all four pictures. Donahue and colleagues (1980) found that children in grades one through eight had no difficulty identifying the correct picture after hearing the informative clues. However, both younger children and language-impaired children were less likely than their comparison groups to request clarification of the inadequate messages. As a result, they made significantly fewer correct picture choices. Gale, Liebergotti, and Griffin (1981) found that language-impaired children used more nonverbal requests and a restricted number of linguistic forms when making requests for clarifications than did language-normal children at the same language stage. Courtright and Courtright (1982) compared language-impaired and language-normal children in terms of their ability to interpret emotional meaning from the vocal cues of an adult speaker. This ability is an important factor in a child's pragmatic language functioning. The findings suggested that language-impaired children were less sensitive than language-normal children to vocal cues. However, these results did not address the issue of whether language-impaired children are actually simply less sensitive to such vocal cues or whether they provided different response patterns to these emotions.

Donahue, Pearl, and Bryan (1980) presented results that indicate that the productive language deficits may be sufficiently significant to interfere with even the informal and elliptical conversations characteristic of communication among peers and family members. Graybeal (1981) compared the ability of language-impaired children and their chronological age-mates to recall stories read to them. She found that the language-impaired group recalled significantly fewer ideas than their normal controls. The language-impaired did not differ from normals in the ordering of the story information, the amount of plausible information added to the story, or the number of errors in recall. Lucas (1980) believes that the basis of pragmatic problems is a semantic disability. She suggested that children who have limited language repertoires may not understand that communication is useful. Wiig and Semel (1984) outlined some of the difficulties that learning disabled children exhibit in the area of social perception. They fail to perceive, interpret, and appropriately use facial expressions, gestures, and body language.

Methodological Issues in Studying Language-Impaired Children

According to Kirchner and Skarakis-Doyle (1983), although the understanding of language disorders has broadened considerably over the past two decades, the results of research in this area are fragmentary and contradictory. They agree with Johnston (1982) that the only consistent conclusion from research in this area is that learning-delayed children may learn to speak slowly and late, but little else about their language has proven remarkable.

Gallagher (1983) stated that spontaneous language sampling is the centerpiece of child language assessment. According to Gallagher, it has been recommended as one of the main sources of information about children's language for over five decades. Language analysis procedures have changed over time. The procedures for obtaining a language sample, however, have remained basically unchanged since they were first described by McCarthy (1930). Gallagher points out that one of the concerns in gathering language samples has been the issue of collecting a representative sample. She believes that this issue is complicated by the fact that language use varies with context. Any language sample would be the product of a combination of contextual variables and the child's knowledge of language structure. The major response to this dilemma has been to obtain language samples in more than one context. Miller (1981) suggested that three 15-minute language samples be obtained: one with the mother in free play, one with the clinician in free play, and one with the clinician directing the child with questions and commands. In addition, he suggested that a sample could be collected with a playmate or a sibling. McLean and Snyder-McLean (1978) recommended that language samples be obtained in a "warm" atmosphere. This, they suggested, might be the home, the classroom, or a playroom with someone familiar to the child present. They further suggested that the assessment should consist of three observation sessions scattered over several days. They stated that the sessions do not need to differ in terms of the communicative partner, materials, or setting. Muma (1978) also suggested that three language samples should be collected. Bloom and Lahey (1978) recommended that the child's language be sampled in more than one setting if that is possible.

According to Gallagher (1983), directly comparable data regarding physical context variables are not available for language-impaired populations. Based upon their clinical experience assessing language-impaired children, however, Bloom and Lahey (1978) suggested that a greater number of utterances and a greater variety of utterances can be obtained by structuring the clinician-child interaction around a concrete activity using items such as science experiments, art projects, and construction toys. Stalnaker and Creaghead (1982) conducted a study in which they examined three experimental conditions to determine if there were significant differences in the quality and quantity of language produced in these situations when compared to each other. There were three test conditions: retelling a story with toys; playing with the toys; and playing with the toys with questions from the examiner. The latter condition produced a larger number of total utterances. The researchers suggested that some kind of adult contribution such as asking questions or telling a story may give the children more to talk about and keep then from getting so involved with the toys that they do not talk. The results of the study did not demonstrate that one method of obtaining a language sample was superior, but gave support to the notion that methods need to be varied among children and provided suggestions for choosing a strategy based on the child's manner of responding.

Simon (1985) suggested a format for a functional-pragmatic evaluation procedure and presented several considerations that should be taken into account when developing an assessment strategy for language-impaired children. The procedure should be comprehensive and descriptive and yet meet time constraints within a school setting; therefore, it must have structure. There should be a series of evaluation tasks that stimulate communicative contexts and probe metalinguistic awareness. It should include informal evaluation procedures which allow the clinician to apply recent research immediately. The informal procedures must have standard and consistent instructions and materials. In the past two decades the speech-language pathologist has become increasingly sophisticated in the assessment of several areas of language functioning, including analyzing the child's syntax and evaluating semantics. The ability to select lexical items and to structure them appropriately is important, but the ability to make good sentences can be useless unless the child understands how and when the sentences can be used (Johnson et al., 1984). Thus, a complete language evaluation must include tasks that will examine these aspects of oral communication.

Gallagher and Prutting (1983) discussed a protocol that is organized around four areas: the utterance act, the propositional act, the illocutionary act, and the perlocutionary act. Dale (1980) developed measures of pragmatic development for children in the second year of life. He concluded that the range of pragmatic functions in a child that age is measurable and contributes information not provided by a measure of syntactic development alone. Stalnaker and Creaghead (1982) found that preschool children produced the longest MLUs when they retold a story using objects to act it out, compared to two other toy manipulation conditions. The literature as a whole suggests that every aspect of physical context probably can, but will not necessarily, affect a particular child's use of language. However, it is clear that the number of contextual variables that have the potential of influencing children's language use is too great to suggest that all contexts should be sampled during each language assessment. Sampling across a few contextual environments, however, meets the practical requirement of efficiency (Gallagher, 1983). For several years, investigators have documented the effects of physical context variables on the syntactic performance of children. Only a few studies however, have examined the effects of these variables on pragmatic performance, and few, if any, have included an analysis of topic categories or subject matter. In view of the current emphasis on the use of play in language assessment and intervention in the area of pragmatics, documentation of the effect of specific play situations on the types of topics discussed by children is warranted (Wanska, Bedrosian, & Pohlman, 1986).

The term discourse topic appears frequently in current research on language but investigators have not agreed on a precise definition (Brinton & Fujiki, 1984). Bedrosian (1985) described topic as the proposition or set of propositions or subject matter about which the speaker is either providing or requesting new information. Once a topic has been initiated by a participant, continuous discourse constitutes those subsequent turns that are linked in some manner to the topic that was initially introduced. Chapman (1981) suggested that the types of continuous discourse turns used by a child may offer important developmental information regarding his or her level of communicative competence. Bedrosian (1985) asserted that topic offers an all encompassing framework for viewing communication skills and reported that it has been suggested that researchers code the communicative intent of each topic initiation. She explained how this procedure may help in identifying those clients who are having difficulty in initiating and maintaining topics. Brinton and Fujiki (1984) offered a description of Keenan and Schieffelin's (1976) model for the establishment of topic, topic continuation, and topic shading. They suggested that language analysis should focus on the number of topics introduced, the number of topics reintroduced, the number and proportion of topics maintained, the length of topic maintenance, and the number of topics shaded.

Although the study of isolated variables in a small number of subjects raises several methodological concerns, the use of small numbers of subjects with careful attention to research design may in some cases yield very significant data. McReynolds and Thompson (1986) pointed out that our profession has gained valuable information from studies of single subjects. They stated that descriptive studies of the speech and language behavior of one subject abound in our literature. As an example, they cited the work of Paul Broca (1869) which involved study of only one subject, the results of which continue to influence current theory and research regarding the brain and its relationship to language.

Another example of small N research that has had widespread impact on what is currently known about language is Halliday's (1975) study of his son Nigel. Bloom and Lahey (1978) reported data based on Bloom's observations of her daughter Allison. Ninio and Bruner (1978) used Greenfield and Smith's (1976) data on one child to report on the longitudinal development of indicative and volitional performatives. Several other investigators of child language have used sample sizes of ten children or less to conduct studies that have contributed significantly to our understanding of child language development (Dore, 1977; Bloom, Rocissano, & Hood, 1976). McReynolds and Thompson (1986) concluded that these small N studies have had a strong impact on our understanding of speech and language development and disorders. Among the practical advantages of using small N studies which they discussed is that this type of design may sometimes be more economical in terms of time, and that researchers are not usually faced with the sometimes impossible task of locating large numbers of allegedly homogeneous subjects with a particular communication disorder, randomly selecting a sample for study, and assigning them to the required groups.

There are three basic types of small N studies: diary studies, single-subject experimental studies, and case studies. Diary studies are usually longitudinal in nature. Researchers study some aspect(s) of speech and language development for several months or years. Single-subject experimental studies generally explore the efficacy of selected treatment approaches. They involve small numbers of subjects who receive several variations of treatment in an attempt to determine advantages and disadvantages of using the experimental treatments for each subject in the study. Case studies are observational research projects that involve detailed analysis of behavior that occurs during a specified period of time. While there are unique advantages for each of these types of studies, McReynolds and Thompson (1986) point out that the case study approach has prevailed throughout the history of our profession. The 1983 issue of Topics in Language Disorders was devoted exclusively to articles about case studies of phonological disorders. Writers of the various articles in the volume emphasized the individuality of children as language learners and stated that as researchers acquire information from careful and extensive examination of one child's methods of acquisition, a data base will eventually emerge which may have universal application in the study of language development and disorders.

Statement of Need

Prutting and Kirchner (1987) suggested that future research should address the performance of well-defined clinical groups which are matched on diagnostic profiles to extract patterns of clusters or dimensions on which the subjects perform well or poorly. They believe that this kind of research would allow us to better understand the nature and impact of a pragmatic deficit in a population of disordered subjects based on pattern analysis from relatively homogeneous groups. They further suggested that an indepth descriptive account of linguistic and cognitive performance should yield data that could be used that will emerge as strengths and weaknesses at the pragmatic level.

To date, no research investigation has presented data on the multiple dimensions of pragmatics in language-impaired children. Previous studies have examined only isolated aspects of pragmatics (i.e., conversational repairs, presupposition, communicative functions). Therefore, researchers in the area of child language do not have a clear picture of the linguistic strengths and weaknesses in this group of children. Furthermore, it is not known if pragmatic deficits occur in isolation, in conjunction with other deficits or in variable patterns.

Further, no previous research has presented comprehensive analyses of the multiple dimensions of language in language-impaired children who have been diagnosed as having a primary deficit in the domain of pragmatics. Lastly, no study has used a language processing model as a basis for determining the dimensions of language to be included in a comprehensive study of this nature. There is a need to develop comprehensive communicative profiles of language-impaired children with primary pragmatic deficits (Prutting and Kirchner, 1987).

According to Ochs (1979), expanding the study of child language to include pragmatic dimensions of communication enables us to see the variety of communicative skills the young child uses in everyday social situations. She feels that this, in turn, provides a richer and more accurate account of the child's linguistic and social knowledge. There is no standardized method of collecting language samples, and no definitive evidence regarding the most effective methods for determining the child's maximum potential (Stalnaker & Creaghead, 1982).

Over several years, investigators have documented the effects of physical context variables on the syntactic performance of children. However, few studies have examined the effects of these variables on pragmatic performance, and few, if any have involved an analysis of topic categories or subject matter. Although little research regarding the effects of physical context variables on the discourse performance of normal and language-impaired children has been conducted, the consideration of these variables in language assessment and intervention is warranted (Bedrosian, 1985).

This study examined the conversational skills of language-impaired children who had been diagnosed as having primarily pragmatic deficits. Extensive analyses of the language skills of the children in this study were performed on semantic, syntactic, phonologic, and pragmatic dimensions of language. A carefully selected battery of standardized language test measures was administered to each child. Additionally, several informal analyses of various aspects of communicative function were conducted on language samples of each child. A descriptive case study approach was selected as the most appropriate research design for this study. The study examined the children's language performance on standardized tests and in the context of language sampling procedures. The purpose of this study was to attempt to describe and isolate the specific pragmatic variables that are impaired. This study sought to develop a profile of pragmatically disordered children that should aid speech-language clinicians in the assessment of language-impaired children and in developing appropriate targets for remediation.

The experimental questions were

1. What types of communication profiles do language-impaired children with a primary deficit in the area of pragmatics exhibit when their language is evaluated using a specific theoretical model?
    a. Are there any patterns of deficits observed among the language-impaired i.e., do some show strictly pragmatic deficits while others show deficits across domains?
    b. Are there specific deficit patterns within the domain of pragmatics?
2. Does an autistic child who is pragmatically disordered present a linguistic profile that is different from the profiles observed in non-autistic children?

CHAPTER II
METHODOLOGY

The purpose of this study was to conduct detailed analyses of the conversational performance of young children who had been identified as poor conversationalists, in an attempt to describe and isolate the specific pragmatic variables that were impaired. The researcher developed indepth profiles of children who had pragmatic disorders, in order to quantify and qualify the nature of pragmatic disorders and to examine pragmatics in relation to other dimensions of language such as phonology, semantics, and syntax.

Subjects

The subjects were six black male children attending public schools in Gainesville, Florida. There were three case studies, each of which was comprised of a language-normal and a language-impaired child. The language-impaired children were matched with the language-normal children on the basis of nonverbal intelligence, chronological age, socioeconomic status, sex, and race. The children ranged in age from 7:5 to 11:7 years old. The subjects had been diagnosed by an American Speech-Language and Hearing Association (ASHA) certified speech-language pathologist as language-impaired with a primary deficit in the domain of pragmatics.

A.D., an 11-year-old high functioning autistic black male, was in the fifth grade in a regular public school program. He was served by resource teachers twice each day. In 1986 A.D. was administered the Kaufman ABC Test of Intelligence. His performance resulted in a nonverbal IQ score of 100. His initial diagnosis of autism was made when he was two years old and further confirmed when he was tested at the Children's Mental Health Unit, Shands Hospital, University of Florida. A.D. received speech and language therapy for two years at the University of Florida Speech and Hearing Clinic. He was also enrolled in an intervention program at the Children's Mental Health Unit, Shands Hospital, for three years. He is no longer enrolled in either program. R.A., an eleven-year-old black male, served as A.D.'s language-normal control. He was also in the fifth grade in a regular public school program. He was administered the Otis-Lennon Test of Intelligence in 1986. His performance resulted in an IQ score of 102. R.A. had never been the recipient of special services. Both children were being reared by college-educated parents and were involved in a variety of community and church-related activities.

B.N., a seven-year-old language-impaired black male, was enrolled in kindergarten in a regular public school program. He was receiving speech and language therapy twice per week at the school he was attending. B.N. was administered the Weschler Intelligence Scale for Children-Revised in 1988. His performance resulted in a nonverbal IQ score of 92. D.J., a seven-year-old black male, served as B.N.'s language-normal control. He was in the second grade and had not been the recipient of any special services. D.J. was administered the Test of Nonverbal Intelligence in 1988. His performance resulted in a nonverbal IQ score of 97. Both children were from low socioeconomic backgrounds.

T.M., a seven-year-old language-impaired black male, was in the first grade in a regular public school program. He was receiving speech and language therapy twice per week at the school he was attending. T.M. was administered the Weschler Intelligence Scale for Children-Revised in 1988. His performance resulted in a nonverbal IQ score of 99. G.N., a seven-year-old black male, served as T.M.'s language-normal control. He had not been the recipient of any special services. He was administered the Columbia Mental Maturity Scale in 1988. His performance resulted in a nonverbal IQ score of 100. Both children were from low socioeconomic backgrounds.

All subjects met the following selection criteria:

1. All of the children exhibited nonverbal intelligence within a normal range as measured by a standardized intelligence test;
2. All children exhibited normal structure and function of the speech mechanism on the basis of results of administration of the Dworkin-Culatta Oral Mechanism Examination (D-COME) (Dworkin & Culatta, 1980);
3. All children passed a hearing screening test at the 25dB level;
4. All children had normal or corrected-to-normal vision;
5. All children came from homes where English was the only language spoken;
6. All language-impaired subjects were diagnosed as language-impaired on the basis of standardized language testing which was conducted less than 12 months prior to the onset of the study; and
7. All language-impaired children had been diagnosed as presenting with pragmatic deficits by an ASHA-certified speech-language pathologist.

Assessment Model

The areas for assessment were directed by the Child Language Processing Model (CLPM), which was developed by Aram and Nation (1977). The tests that were used based on the model are presented in Figure 2-1. The CLPM is a language processing model comprised of three segments which suggest the processes by which children receive, comprehend, repeat, formulate, and produce messages. The model is based on the assumption that disordered language behavior is a reflection of disrupted language processes within its three segments. Language disorders are considered to be a reflection of disrupted underlying processes. The model is comprised of three interrelated processing segments. Each segment is made up of a series of processing stages. The first segment is the Speech to Language Processing Segment. It involves prelinguistic processing of the language message before it becomes meaningful. There are three processing stages within this segment, sensation, perception, and repetition. Sensation is concerned with receiving the intensity and frequency of sounds that are produced. Auditory acuity is the area that was assessed in this stage of the model. The speech perception stage involves the transformation of acoustic information into the speech code. Repetition involves the ability to reproduce verbal information. The areas assessed at this stage include auditory discrimination, auditory memory, auditory sequencing, and repetition.

The second segment of the model is the Language to Thought to Language processing segment. It is concerned with the interpretation of the speech code as processed by the first segment. There are four processing stages within this segment of the model: speech and language repetition; language comprehension; language integration; and language formulation. Language comprehension is the processing stage in which the child understands the words and grammar that the child hears but does not necessarily fully interpret the complexities of meaning that are embedded in the message. The integration stage links comprehension and formulation in the CLPM. The process of integration permits the listener to understand the pragmatics of the language heard and to relate what is heard to past experiences, to information from other sensory modalities, and to other aspects of cognition. The final stage in this segment, language formulation, is concerned with the selection and retrieval of words and the organization of these words into a logically acceptable and syntactically appropriate form (Aram and Nation, 1977). At this stage, the speaker's intentions and messages are translated into language structure. The Language to Speech processing segment is the final component of the model. It is primarily a postlinguistic segment that has two stages, speech programming and speech production.

General Procedures

There were two basic data collection procedures, norm-referenced testing and language sampling. These procedures will be discussed separately in detail below. Each child was seen for four test sessions within a three-week period. All norm-based tests and procedures were administered during the first three sessions. Each of the three sessions lasted approximately 60-90 minutes.

The norm-referenced tests were administered and scored by the experimenter and a graduate student clinician under the direct supervision of an ASHA certified speech-language pathologist. The graduate clinician was involved in pre-test training sessions with the experimenter to ensure consistency and proficiency in administration and scoring of each of these tests. All tests were administered and scored according to standardized instructions presented in the examiners' manuals. The hearing screening procedure was performed in accordance with ANSI (1969) standards. During all sessions the children sat at an appropriately sized chair and table. All testing was conducted in well-lit and relatively quiet areas of the various schools and test centers.

A language sampling procedure was used to examine several aspects of communicative performance. The sample was collected during the fourth test session. While the language sample was being collected, the subjects in this study were involved in three activities: "Script-Based Play," "Elicited Schemes Play," and "Barrier Task Play."

A portable videorecorder and camera were used to record all data collection sessions. A portable audiometer, calibrated in January, 1988, was used to conduct the hearing screening tests.

Norm Referenced Tests

Rationale. The purpose of using norm-referenced tests was to obtain valid and reliable standardized test scores reflecting each child's current level of functioning in several aspects of language including auditory skills, vocabulary comprehension, syntactic comprehension and expression, phonological production, and pragmatic comprehension and expression. Norm referenced measures allow a direct comparison of one child's behaviors to those of other children (Newhoff and Leonard, 1983). The specific tests that were used in this study were selected on the basis of their available reliability and validity data and on the basis of their general acceptance and use among speech-language pathologists. The tests were also selected to represent the various domains of language (semantics, syntax, phonology, pragmatics) as discussed earlier in the assessment model.

Test Battery: Procedures and Analysis

The test battery consisted of the hearing screening test; the D-COME; *The Peabody Picture Vocabulary Test-*

Revised (PPVT-R) (Dunn & Dunn, 1981); The Test of Auditory Comprehension of Language-Revised (TACL-R) (Carrow-Woolfolk, 1985); The Goldman-Fristoe Test of Articulation (Goldman & Fristoe, 1986); The Kahn-Lewis Phonological Analysis (Kahn & Lewis, 1986); The Token Test for Children (DiSimoni, 1978); The Test of Word Finding (German, 1986); The Weschler Intelligence Scale for Children-Revised (WISC R) (Weschler, 1974) and selected subtests from the Goldman-Fristoe-Woodcock Auditory Skills Test Battery (Goldman, Fristoe, & Woodcock, 1974). The processing segments that comprise the CLPM and the test procedures chosen to correspond to each segment of the model are presented in Table 2-2. Following is a description of each of the tests and subtests that were used in the study.

The PPVT-R is a norm-referenced test designed to measure receptive vocabulary for Standard American English. The PPVT-R utilizes a picture selection format. The examiner says a word and the child selects the appropriate picture from four black line drawings on a single page. It was normed on individuals from age two and one-half years to adulthood. A raw score was obtained following the procedures specified in the examiner's manual. The raw score was converted to a language-age equivalent.

The TACL-R measures auditory comprehension of word classes and relations, grammatical morphemes, and elaborated sentence constructions. It has normative data for children aged three through nine with guidelines for use with adults. Each page consists of three black line drawings from which the child has to select the picture that best illustrates the meaning of the word or the appropriate morphological or syntactic structure used by the examiner. Syntactic comprehension was analyzed using the results obtained from administration of the TACL-R. Specifically, the following variables of auditory comprehension were determined: the number and types of word classes and relations correctly understood, the number of grammatical morphemes comprehended, and the number of elaborated sentence constructions understood. A raw score was converted into a language age score.

Phonological development was determined through the use of The Goldman-Fristoe Test of Articulation. This test provides a systematic assessment of articulation of consonant sounds. It provides percentile rank norms which may be used with individuals who range in age from 2 years to adulthood. The test utilizes large colorful pictures of common everyday objects. The child is expected to label each picture as it is presented by the examiner. The Kahn-Lewis Phonological Analysis was selected to further describe the phonological abilities of any child with a disorder of speech sound production. It allows one to perform a phonological process analysis on data from the Goldman-Fristoe and yields a percentile rank score of overall phonological process usage, a phonetic inventory, and an age equivalent score.

The Goldman-Fristoe-Woodcock Auditory Skills Test Battery consists of four subtests and is designed to measure several aspects of auditory skills. The test was normed on individuals aged three years through adulthood. The Auditory Memory, Auditory Sequencing, and Auditory Discrimination subtests were administered to the subjects in this study.

The Token Test for Children was developed to assess an individual's ability to process and recall verbal directions of increasing length and complexity. DiSimoni (1978) and Noll (1970) revised the original version so that it may now be used with children as young as three years old in addition to the adult population. The Token Test provides limited standardization information. The individual being tested is expected to respond to verbal commands by manipulating tokens of various colors and shapes. The commands range in length from four to ten words. Morley et al. (1979) reported that scores on the Token Test correlate highly with scores on tests of auditory comprehension.

Measures of aspects of expressive and receptive pragmatics were obtained using results from administration of the WISC-R. The WISC-R was normed on children ranging in age from six years to 16 years old. The WISC-R is comprised of two major scales, verbal and performance. One of the verbal subtests were administered to the subjects in this study. The WISC-R provides a point scale. Raw scores were obtained for each of the subtests. These scores were then converted into standard scores based on the subject's chronological age.

The Test of Word Finding (TWF) is based on a diagnostic model of word-finding assessment drawn from child and adult literature on word-finding disorders. The TWF is normed on children aged six and one-half to thirteen years of age. It has five wordfinding sections and one comprehension section. Section One is called Picture Naming: Nouns; Section Two is titled Sentence Completion Naming; Section Three is titled Description Naming; Section Four is titled Picture Naming: Verbs; Section Five is titled Picture Naming: Categories; and Section Six assesses the comprehension of those target words which the child had difficulty naming on the five word-finding sections. Raw scores are calculated for each section. The raw score may be converted to standard scores and percentile ranks.

Sampling Test Procedures

Rationale. There are many variables that may interact to influence the nature of the conversational skills exhibited by a child at any particular time. Therefore, it is incumbent upon the diagnostician to assess the child's language behavior in a variety of physical and social contexts. Fey (1986) stated that in addition to formal testing, the speech-language pathologist should assess the child's language in conversational contexts. He further suggested that a child's performance in all areas of language content (semantics), form (syntax), and use (pragmatics) be compared to the clinician's expectations for a typical child of the same chronological or mental age. This comparison of the child's total communicative performance in a variety of informal and formal situations helps the clinician arrive at a more appropriate decision relative to the nature of the child's communication skills in everyday situations.

The sampling procedures were designed to yield a data base for the analysis of semantic diversity, syntactic complexity and several aspects of pragmatics (Table 2-3). Semantic diversity was determined using procedures outlined by Bennett and Alter (1985). Syntactic complexity was determined using the Language Sampling Analysis and Training procedure (LSAT) (Tyack & Gottsleben, 1974). Pragmatic competence was analyzed along several parameters including: overall communicative functions, topic manipulation, verbal turn-taking, presupposition, and conversational repairs. Several communicative functions were examined including behavior requests, information statements, information requests, directives, interpretatives, projectives, and relationals. The aspects of topic performance that were examined include topic initiation, topic maintenance, the proportion of topics maintained, and the number of on-topic exchanges. Presuppositional skills that were examined included cohesion, informativeness, and deictics. Several aspects of communication related to conversational repairs were examined: contingent queries, repetitions, cause of breakdown, presence or absence of repair attempts, repair initiator, repair strategy, and the outcome. The presence or absence of verbal turn-taking cycles and the nature of those cycles were also examined.

Procedures. A language sampling procedure was used to examine several aspects of communicative performance. The sample was collected during the fourth test session. The fourth session lasted approximately 60 minutes. Procedures conducted during this fourth session and subsequent scoring and analysis of all results was performed by the experimenter. The play room was equipped with a common set of age-appropriate toys/props for each session. The experimenter interacted with each child at least once prior to the actual videotape session. Only the examiner and one child were present in the playroom during the first three test sessions. A third person was called into the room for the Barrier Task activity during the fourth session. The same individual, an ASHA-certified speech-language pathologist, was the third person for the Barrier-Task activity with each child in the study. Three distinct phases of interaction occurred during the fourth test session, "Elicited-Scheme Play" interactions, "Script-Based Play" interactions, and "Barrier-Task Play" interactions. A video camera was positioned in the play room where it would cause minimal distraction from the on-going activities of the session. Taping began immediately with the onset of the session and continued throughout all of the interactions. A brief period of conversational interaction initiated each session. This allowed for more natural conversational output from each child as he became acclimated to the test room and to the video equipment.

During the "Elicited Schemes Play" activity, the examiner sought to evaluate the child's ability to conduct a conversation about an everyday activity. The activities selected for this study were Going to School, Art Class Activity, and Planting a Garden. These particular activities were selected because all of the children in this study were attending schools. It was assumed therefore, that each child would have some basic level of familiarity with the steps involved in these regular routines. The examiner started the sessions by engaging each child in conversation about school in general. She asked the child, "Do you like going to your school?" The experimenter made an appropriate comment depending on the child's response. After the conversation had been initiated, the experimenter said to the child, "Tell me how you get ready for school in the morning." When necessary, the examiner provided verbal prompts such as "and then what happens" in order to encourage additional speech output from the child. This activity was considered finished when the experimenter had presented a list of fifteen standard verbal prompts and had received some sort of response from the child to each of them. A complete list of verbal prompts for this activity can be found in Appendix A.

The "Script-Based Play" activity was designed to promote conversation around an age-appropriate theme. The themes _Planting a Garden_ and _Art Class Activity_ were used with the children for this activity. The experimenter placed an appropriate set of toys/props on the table by the child and proceeded through the list of verbal prompts for each activity. The prompts were presented to each child in the same order. The activities were allowed to proceed in a natural manner with the experimenter making comments as appropriate and providing prompts to elicit maximal conversational output from the child. Each activity lasted a minimum of fifteen minutes. Standard prompts from the examiner included "Here are the things we need," "What should we do first?", "How long will it take for the plant to grow?", and "Have you ever seen a real garden?" A complete list of verbal prompts for this activity can be found in Appendix A. A variety of toys were available during the play sessions with each child. A list of the toys can also be found in Appendix A.

The third activity during the fourth test session was "Barrier Task Play." For this procedure a third person was included in the interactions. During this procedure, the examiner performed various manipulations of small objects and figurines including toy cars and trucks. The child was instructed to tell the other participant exactly what the researcher had done so that the third participant could duplicate the researcher's behavior. For example, if the researcher put a small ball in the back of the car with a man in it, the child had to tell the other participant to do the same. If the other participant made a wrong move such as putting the small ball in an empty car, the child had to provide further instructions to the third participant until the task was completed properly. The researcher used a prepared script for the Barrier-Task activity. The third participant also had a copy of the script. Her actions however, were not based on the written script but were the direct result of the child's instructions to her. This barrier task provided an excellent opportunity to assess the child's presuppositional skills.

Data Collection and Analysis

Videotaped language samples were comprehensively transcribed in terms of verbal and nonverbal behaviors. Traditional orthographic symbols were used throughout the transcript. Symbols from the International Phonetic Alphabet were utilized as necessary to code unintelligible or questionable utterances. Contextual notations were provided throughout the transcript. Semantic, syntactic, and pragmatic parameters were analyzed. In addition to type-token ratio (semantics) and structural analysis (syntax), the following pragmatic parameters were analyzed: overall communicative functions, topic manipulation, verbal turn-taking, presupposition, and conversational repairs.

Tough's (1977) taxonomy of communicative functions of utterances for children was used to analyze each child's conversational performance (See Table 2-4). Her procedure identifies four general categories of communicative functions: directive, interpretative, projective, and relational. The directive function includes communicative acts used for the purpose of demonstration, instruction, forward planning, self-directing, and collaboration. The interpretative function involves two major areas: reporting and reasoning. Reporting acts are used when the speaker wants to show elaboration of detail, association with some earlier experience or when making comparisons, the recognition of incongruity, the awareness of sequence, the recognition of associated action or events, the absence of conditions, the recognition of a central meaning, and/or when reflecting on the meaning of experience. Reasoning acts are used to show the recognition of causal relationships and recognition of a principle or a condition. The projective function includes acts used for predicting, showing empathy, and imagining. Predicting acts are used for forecasting, anticipating consequences, surveying possible alternatives, predicting related possibilities, and recognition of problems with prediction of solutions. Empathetic acts are used when the speaker wishes to show understanding of another person's state of being. Imagining acts can be seen when speakers represent or rename objects to be something other than what they are and when making commentary on the imagined context of a situation. The relational function involves self-maintaining and interactional acts. Self-maintaining acts include utterances used to express one's need, protect self-interest, provide justifications, make criticisms, or issue threats. Interactional acts promote various types of social interplay between speaker and listener. Each of the child's utterances were coded as fulfilling one of these utterance acts. The percentage of communicative acts per category were determined for each child.

Topic manipulation was analyzed based on a procedure adapted from Keenan and Schieffelin (1976). Two major areas of topic manipulation were examined: topic introduction/topic change, topic maintenance (Table 2-5). Topic introduction/topic changes were identified as those utterances which were initiated by the speaker which do not relate to the previous on-going discussion. Topic introduction/topic change were analyzed in terms of the number of topics introduced or changed. Topic maintenance were defined as those utterances that pertain to a previously introduced topic and that serve to facilitate on-going discourse by either adding or requesting additional information. Topic maintenance was analyzed in terms of the number of contingent queries produced by the speaker, the number of on-topic exchanges produced by the speaker, and the average number of utterances per topic. Additionally, conversational replies were analyzed according to the criteria specified by Leonard (1986). The presence or absence of seven types of responses to questions and eight types of responses to statements and directives were documented.

Turn-taking behaviors were analyzed utilizing procedures adapted from Prutting and Kirchner (1987), Fey and Leonard (1984), and Roth and Spekman (1984). Two aspects of turn-taking were analyzed: proportion of initiations by the child and proportion of responses by the child.

Analysis of presuppositional skills involved making a determination of the presence or absence of deictics, indirect and direct reference forms, and other forms of cohesion (substitution, ellipsis, conjunction).

An analysis of the child's responses to communicative breakdown was based on a procedure suggested by Roth and Spekman (1984). Five major areas of concern were examined: cause of the breakdown, the presence or absence of a repair attempt, repair initiator (listener or speaker), repair strategy, and outcome.

Semantic diversity was determined using procedures developed by Bennett and Alter (1985). Specifically the analysis yielded data that reflected a type-token ratio (TTR), the number of total words, and the number of different words in the sample.

Syntactic complexity was determined using the Language Sampling: Analysis and Training procedure (LSAT) (Tyack & Gottsleben, 1974). The LSAT separates utterances and their constituents into forms, constructions, and complex sentences. Each subject was assigned to a linguistic level of based on his Word-Morpheme Index. With each child's assigned level as a reference point, his mastery of forms and constructions was determined. Further syntactic analysis was accomplished by using the LSAT to determine the number/percentage of complex sentences in each sample. The specific measure that was examined using this procedure was the proportion of complex sentences within the child's language sample.

Reliability

To establish intrajudge reliability the examiner recoded 25% of each child's data from each of the above mentioned analyses. Interjudge reliability for the data from the language sampling procedure was established by having an ASHA certified speech-language pathologist code 25% of all syntactic, semantic, and pragmatic parameters from each language-impaired child's language sample.

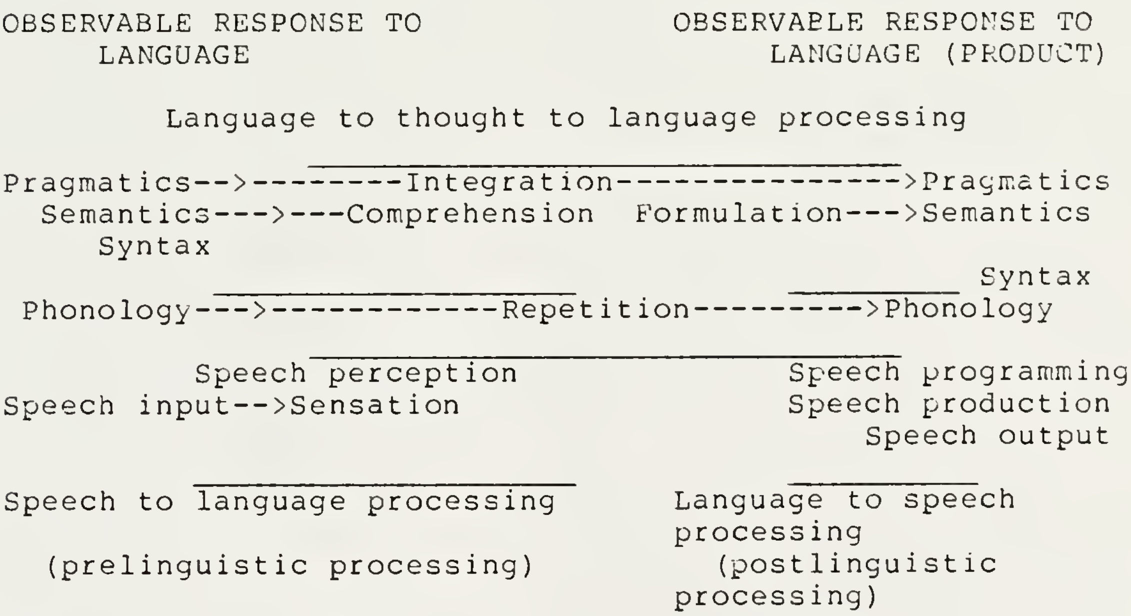
OBSERVABLE RESPONSE TO LANGUAGE
OBSERVABLE RESPONSE TO LANGUAGE (PRODUCT)
Language to thought to language processing
Pragmatics-->--------Integration--------------->Pragmatics
Semantics--->---Comprehension
Formulation--->Semantics
Syntax
Syntax
Phonology--->------------Repetition--------->Phonology
Speech perception
Speech input-->Sensation
Speech programming
Speech production
Speech output
Speech to language processing
(prelinguistic processing)
Language to speech processing
(postlinguistic processing)

Figure 2-1. Child Language Processing Model (Aram & Nation, 1977)

Table 2-1. Assessment Measures Selected to Correspond to Aram and Nation's Model

SPEECH TO LANGUAGE SEGMENT		
Sensation: hearing acuity	¶	Pure-tone test
Perception: auditory discrim.	¶	Discrimination Subtest
auditory memory	¶	GFW Auditory Memory Subtest
auditory sequencing	¶	GFW Auditory Memory Subtest
Repetition	¶	TOLD Repetition Subtest
LANGUAGE TO THOUGHT TO LANGUAGE	¶	
Comprehension: Semantics	¶	PPVT-R
Syntax	¶	TACL-R
	¶	Token Test
Integration: pragmatics	¶	WISC-R
metalinguistics	¶	Similarities
	¶	
Formulation: word retrieval	¶	Test of Word Finding
	¶	
LANGUAGE TO SPEECH	¶	
Speech programming: motor speech	¶	D-COME
Speech production: articulation/	¶	Goldman-Fristoe/
phonology	¶	Kahn-Lewis Analysis

Table 2-2. Non-Norm Referenced Procedures

	Speaker Variables	Protocols Used
PRAGMATICS		
Overall Function	behavior requests information statements information requests directive interpretative projective relational	Guralnick & Paul-Brown (1986) Tough (1977)
Topic Performance	topic maintenance topic initiation number utterances/topic	Keenan & Schieffelin (1976) Fey & Leonard (1984)
Presupposition	informativeness deitics cohesion reference substitution conjunction	Halliday & Hasan (1976) Roth & Spekman (1984)
Conversational Repairs	contingent queries repetitions cause of breakdown presence/absence of repair attempt repair initiator repair strategy outcome	Roth & Spekman (1984) Leonard (1986)
Verbal Turntaking	presence/absence nature of	Prutting & Kirchner (1987) Fey & Leonard (1984) Roth & Spekman (1984)
SEMANTIC DIVERSITY	type-token ratio	Bennett & Alter (1985)
SYNTACTIC COMPLEXITY	structural analysis complex sentences	LSAT Paul (1981)

Table 2-3. Tough's Communicative Functions (Tough, 1977)

General Categories	Inclusive Acts
DIRECTIVE	demonstration
	instruction
	forward planning
	self-directing
	collaboration
INTERPRETATIVE	reporting
	elaboration of detail
	making comparisons
	recognition of incongruity
	awareness of sequence
	recognition of associated actions or events
	absence of conditions
	recognition of central meaning
	reflecting meaning of experience
	reasoning
	recognition of causal relational
	recognition of principle or condition
PROJECTIVE	predicting
	showing empathy
	imagining
RELATIONAL	self-maintaining
	express one's needs
	protect self interest
	provide justifications
	make criticisms
	issue threats
	interactional
	promote various types of social interplay between speaker and listener

Table 2-4. Types of Conversational Replies

Responses to Questions

1. Affirmative answers to yes-no questions
2. Negative answers to yes-no questions
3. Wh-replacement
4. Alternatives
5. Choice responses
6. Requests for repetition/clarification
7. Imitation

To Statements and Directives

8. Affirmation
9. Compliance
10. Refusal/denial
11. Noncompliance
12. Alternative
13. Expansion
14. Requests for repetition/clarification
15. Imitation

CHAPTER III
RESULTS

The purpose of this study was to conduct detailed analyses of the conversational performance of school-aged children who had been identified as poor conversationalists, in an attempt to describe and isolate the specific pragmatic variables that are impaired. The researcher developed indepth linguistic profiles of children who had pragmatic disorders, in order to quantify and qualify the nature of pragmatic disorders and to examine pragmatics in relation to the other dimensions of language including phonology, semantics, and syntax. The present investigation was comprised of three individual case studies. Each case study involved a language-impaired child and a language-normal child matched on the basis of nonverbal intelligence, chronological age, socioeconomic status, and sex. The children ranged in age from 7 to 11 years.

There were two basic data collection procedures, norm-referenced testing and language sampling. Formal assessment procedures were directed by the Child Language Processing Model (Aram & Nation, 1977). The model is based on the assumption that disordered language behavior is a reflection of disrupted language processes within three major processing segments. Thirteen norm-referenced tests and subtests were administered to each child.

The sampling procedures were used to yield a data base for the analysis of semantic diversity, syntactic complexity, and several aspects of pragmatics. All children were engaged in four conversational play activities, an "Elicited-Language" segment called School, two "Script-Based Play" activities called Art Class and Planting a Garden, and a "Barrier-Task Play" activity. Videotaped language samples of the school, art, and garden segments were analyzed to determine the communicative functions of each of the children's utterances. In addition, the children's performance in verbal turn-taking, topic manipulation, conversational replies, and communicative repairs was evaluated. The samples were further analyzed to determine each child's semantic diversity, syntactic complexity, and phonological performance. The "Barrier-Task Play" segment was analyzed to evaluate each child's presuppositional skills. In addition to the pragmatic analysis, the individual utterances were evaluated to determine the subject's semantic diversity (type-token ratios) and syntactic development.

Videotaped language samples were comprehensively transcribed for verbal and nonverbal behaviors. Traditional orthographic symbols were used throughout the transcript. Contextual notations were provided as appropriate.

To establish intrajudge reliability the examiner recoded 25% of each child's data from each of the above-mentioned analyses. A coefficient of .97 was achieved for the intrajudge reliability. Interjudge reliability for the language sampling data was established by having an ASHA certified speech-language pathologist recode twenty-five percent of all syntactic, semantic, and pragmatic parameters from each language-impaired child's communication sample. A coefficient of .89 was obtained for the interjudge reliability.

Case Study One

Subjects

The first case study compared the linguistic performance of two eleven-year-old Black males. A.D. was the language-impaired subject and R.A. was his language-normal control. Both of the children were in fifth grade and attended public schools in Gainesville, Florida.

Norm-Referenced Test Results

Six norm-referenced tests were administered to each child. These tests measured auditory perceptual skills, semantic and syntactic comprehension, syntactic repetition, metalinguistic skills, word-finding skills, and oral motor skills. The results of the auditory perceptual skills tests are presented in Table 3-1. All other norm-referenced test results are presented in Table 3-2.

Auditory Perceptual Skills Battery. The Auditory Discrimination and Auditory Memory subtests from the Goldman-Fristoe-Woodcock Auditory Skills Battery were administered to assess each child's auditory perceptual abilities: Auditory Discrimination and Auditory Memory.

There was some variability between the performance of the two children on the auditory perceptual skills subtests. A.D. obtained a combined raw score of 289 on parts I, II, and III of the Auditory Discrimination subtest. This score corresponds to an age equivalency of 7.3 years and placed him at the fifth percentile. R.A. obtained a combined raw score of 297 on the Auditory Discrimination subtest. This score corresponds to an age equivalency of 14.2 and places him at the sixty-eighth percentile.

The Auditory Memory subtest is comprised of three segments: recognition, content, and sequencing. Both A.D. and R.A's performance on the "recognition" section of the Auditory Memory subtest yielded a raw score of 99 which corresponds to an age equivalency of 8.2 years and places them at the fourteenth percentile. Each of the children obtained lower than expected scores for their ages on the "content" section of the Auditory Memory subtest. Both A.D.'s raw score of 6 with its corresponding age equivalency of 4.10 and R.A.'s raw score of 13 with its age equivalency of 5.11 places them below the first percentile. The subjects showed considerable variability in their performances on the "sequencing" segment. A.D. obtained a raw score of 47 and an age equivalency of 9.6 which places him at the thirtieth percentile. R.A. obtained a raw score of 84 and an age equivalency of 18.11 which placed him above the ninety-ninth percentile.

In summary, A.D's auditory discrimination scores place him well below the fiftieth percentile. R.A.'s scores were considerably above the fiftieth percentile. The subjects obtained identical scores on the recognition section of the auditory memory subtest. Both subjects obtained scores on the content section of the auditory memory subtest that were well below what is expected for their age. Their scores placed them below the first percentile. A.D.'s scores on the auditory sequencing section fell well below the fiftieth percentile while R.A.'s score was above the ninety-ninth percentile.

Semantic and Syntactic Comprehension. Four measures of semantic and syntactic comprehension and were given to each child. The subjects demonstrated noteworthy differences in their lexical comprehension abilities as measured by the Peabody Picture Vocabulary Test. A.D. obtained a raw score of 64 which corresponds to a standard score of 43 and a semantic comprehension age equivalent of 5.6. These results suggest that A.D. is functioning below two standard deviations from the mean for his age. R.A. obtained a raw score of 113. His score corresponds to a standard score of 96 and a semantic comprehension age equivalent of 10.10. R.A.'s scores suggest that he is functioning within the normal range for his age.

A.D. and R.A. exhibited significant differences in their comprehension of syntactic structure as measured by the Token Test for Children. A.D. received a raw score of 39 which corresponds to a standard age score of 478 and a grade score of 480. Standard scores between 495 and 505 are considered to be within the average range. R.A. received a raw score of 60 on the Token Test. His score corresponds with a standard age score and grade score of 505. Standard scores below 494 are considered to be inferior and indicate a need for additional testing. Scores below 494 are considered to be inferior and indicates a need for additional testing in the area of semantics and syntax. Those children scoring in the range of minus three standard deviations will have scored more poorly than approximately 97% of the standardizing group of children. A.D.'s scores place him well below the third standard deviation indicating a significant deficit in the area of syntactic comprehension. R.A.'s scores fall within the high range of normalcy for his age group.

The Test of Auditory Comprehension of Language, which measures syntactic comprehension, does not provide normative data for children over 10 years old. Although the subjects were 11 years old at the time of testing, results from this test were used to provide further comparisons of the children's comprehension abilities. The test is comprised of three sections: Word Classes, Grammatical Morphemes, and Elaborated Sentences. The subjects performed similarly in the Word Classes category. A.D. obtained a raw score of 36 while R.A. obtained a raw score of 40. A.D.'s raw score in the Grammatical Morphemes section was 15 and R.A.'s raw score was 40. Even greater differences were observed in the Elaborated Sentences section. A.D. obtained a raw score of 9 and R.A. obtained a raw score of 40. The mean syntactic comprehension age for A.D. was 4.5. R.A. responded correctly to all of the items in the test and therefore demonstrated a ceiling level performance of at least 10 years.

In summary, A.D. demonstrated markedly lower functioning on all of the semantic and syntactic comprehension measures than his control. A.D.'s semantic comprehension scores suggest that he is functioning below two standard deviations from the mean for his age. R.A.'s semantic comprehension scores suggest that he is functioning within the normal range for his age. A.D. exhibited a significant deficit in his comprehension of syntactic structures on two seperate measures. R.A.'s scores on both measures indicate that his comprehension of syntactic structures is well within the normal range for his age.

Repetition, Metalinguistic and Word-Finding Skills. Three measures were used to assess each child's repetition, metalinguistic, and word-finding skills. The Sentence Repetition subtest of the Test of Language Development was used to provide a measure of each child's expressive syntax. The Similarities subtest from the Weschler Intelligence Scale for Children-Revised was used to obtain information about each child's metalinguistic skills. The Test of Word-Finding was used to evaluate each child's word-finding skills.

Differences were observed between the two children's performances on the Sentence Repetition subtest of the Test of Language Development. A.D. correctly responded to 15 (50%) of the 30 test items. His score corresponds to an age equivalency of 6.8 years. R.A. correctly responded to 28 (93%) of the items. His score corresponds to an age equivalency of at least 9.5 years. Some variability was observed between the children's performances on the Similarities subtest of the Weschler Intelligence Scale for Children-Revised. A.D. obtained a raw score of 11 which corresponds to an age equivalency of 11.12. R.A. obtained a raw score of 18 which corresponds to an age equivalency of 15+.

The *Test of Word-Finding* was used to evaluate each child's word-finding skills. A.D. was not able to achieve a basal score on the comprehension section of the test. According to the instructions in the administrative manual, the *Test of Word-Finding* cannot be administered if the child demonstrates poor comprehension of the test items. Thus, the *Test of Word-Finding* was not appropriate for assessing A.D.'s word finding skills. R.A. obtained a raw score of 89 on the *Test of Word-Finding*. His performance represented a profile of a fast and accurate namer.

In summary, A.D. exhibited lower functioning in repetition, metalinguistic, and word-finding skills than his control. His metalinguistic scores were within the normal range for his age. A.D.'s scores suggest a deficit in expressive syntax. His performance on the *Test of Word Finding* was inconclusive because of his low comprehension skills.

Oral Motor and Articulatory Skills. Three tests were used to measure the oral motor skills of the children in the present study. The *Dworkin-Culatta Oral Mechanism Examination* was used to obtain information about the structure and function of each child's oral speech mechanism. Each child demonstrated normal structure and function of the oral speech mechanism. The *Goldman-Fristoe Test of Articulation* was used to measure the accuracy of each child's production of sounds in words and in sentences.

It was not necessary to use the Kahn-Lewis Phonological Analysis.

The only misarticulation exhibited by A.D. was substitution of the /w/ for /r/ in the initial position of words, and A.D.'s articulation of single words and sentences was very intelligible. No misarticulations were evident in R.A.'s test results. Therefore, it was not necessary to conduct a phonological analysis on these language samples.

Results of Sampling Techniques

Semantic Diversity. Eight non-standardized procedures were used to obtain information about each child's semantic, syntactic, and pragmatic skills. The eight areas assessed included semantic diversity, syntactic complexity, communicative functions, verbal turn-taking, topic manipulation, conversational replies, communicative repairs, and presuppositional skills.

The Word-Class Inventory for School Age Children (Bennett & Alter, 1985) procedure was used to determine each child's type-token ratio. According to its authors, this is a measure of the diversity of expressive vocabulary. A type-token ratio was calculated on the second set of 50 sentences selected from each child's syntactic analysis. These data are presented in Table 3-3.

In his 50-utterance sample, A.D. produced 190 total words and 73 different words yielding a TTR of 3.74. R.A.

produced a total of 469 words and 152 different words yielding a TTR of 4.97. The mean number of different words that children at this age are expected to produce is 187.8 with a range of 155-222 words. The mean total number of words expected is 445.9 with a range of 362-529 words. The mean expected TTR is 6.29 with a range of 5.76-6.83 (Bennett & Alter, 1985). A.D.'s total number of words and total number of different words falls well below the range expected for a child his age. R.A.'s overall total number of words and total number of different words were within the age appropriate range for his age. Both children's TTR's fell below the expected range. A.D.'s TTR of 3.74 is 3.74 standard deviations below the lower boundary of the expected range and R.A.'s TTR of 4.97 is 1.46 standard deviations below the lower boundary of this range.

Further, each subject's TTR data was computed for all utterances produced in each of the three language activities (school, art, garden). The analyses are presented in Table 3-4. A.D. produced 268 total words during the school activity, 179 during the art activity, and 203 during the garden activity. He produced 122 different words during the school segment, 73 during the art segment, and 77 during the garden segment. R.A. produced 704 total words during the school activity, 488 during the art activity, and 330 during the garden activity. He produced 263 different words during the school segment, 115 during the art segment, and 127 during the garden segment. There are no norms available for interpreting these data. However, A.D. produced far fewer total words and different words in all three tasks than did his control.

In summary, A.D.'s total number of words and total number of different words falls well below the range expected for a child his age and R.A.'s total number of words and total number of different were within the age-appropriate range for his age. Both children's TTR's fell below the expected range. A.D.'s TTR was well below the mean expected for his age. R.A.'s TTR was slightly also below the mean expected for his age. A.D. produced far fewer total words and different words in all three tasks than his control.

Syntactic Complexity. Each child's expressive syntax was examined using the Language Sampling, Analysis, and Training procedure. Sentences of two or more morphemes were taken from the school, art, and garden activities and included in the sample. Unintelligible utterances were excluded from the sample. The number of words and morphemes were calculated for each sentence according to the instructions in the examiner's manual. A comparison of A.D. and R.A.'s syntactic profiles is presented in Table 3-5.

A.D.'s sample yielded 108 scorable sentences. R.A.'s sample produced 137 scorable sentences. A.D. produced 476 words and 575 morphemes. R.A. produced 1385 words and 1535 morphemes. The mean number of words per sentence was 4.49 for A.D. and 10.0 for R.A. A.D. produced an average of 5.4 morphemes per sentence and R.A. produced an average of 11.1 morphemes per sentence. Each subject's mean number of words and mean number of morphemes were added together and divided to obtain the word-morpheme index. A.D. obtained a word-morpheme index of 4.9 and R.A. obtained a word-morpheme index of 10.5. Each child was assigned to a linguistic level on the basis of his word-morpheme index. A.D. was assigned to Level IV and R.A. was assigned to Level VI+. These levels represent an attempt to objectify the current status of a child's syntactic functioning and is one of several measures that are used to obtain a precise description of the child's present productive system.

Fourteen (12%) of A.D.'s 108 sentences were complex sentences. Sixty-four (47%) of R.A.'s 137 sentences were complex sentences. A.D.'s sentences ranged from two words and two morphemes to fifteen words and eighteen morphemes in length. R.A.'s shortest sentence contained two words and two morphemes and his longest sentence contained twenty-nine words and thirty-one morphemes.

In summary, A.D.'s sample yielded fewer sentences, fewer words per sentence, fewer morphemes, and fewer complex sentences than his control. A.D.'s performance suggests a marked deficit in syntactic skills. R.A.'s performance was well within the expected range for his age.

Communicative Functions. These data represent all utterances from the school, art, and gardening samples combined. The communicative function of each child's individual utterances was determined using Tough's (1977) system. Each utterance was coded as fulfilling one of four communicative functions: directives, interpretatives, projectives, and relationals. Any utterance with which the child seemed to be providing instructions, demonstration, self-direction, collaboration, and/or forward planning was classified as a directive statement. Any utterance that the child used to report information or to provide elaboration of details was classified as an interpretative statement. Projectives were considered to be child utterances that were used to predict, imagine or show empathy. Relational statements included all utterances that were used to promote various types of social interplay between the child and the conversational partner, including those statements that the child used to express his needs, protect his interest, provide justifications, make criticisms, and make threats.

The results of the analyses are presented in Table 3-6. Considerable variability was observed between the subjects' performance in the directives category. Eleven percent of A.D.'s productions were directives and 43% of R.A.'s production were directives. The subjects also showed differences in their use of interpretatives. Eighty percent of A.D.'s utterances fell into that category while 45% of

R.A.'s utterances were interpretatives. Both children used a very low rate of projectives. A.D. produced no projectives and only 4% of R.A.'s utterances were considered to fall into that category. A.D. and R.A. also showed low performances in the relationals category. Nine percent of A.D.'s utterances were relationals while eight percent of R.A.'s productions were relationals.

Each utterance was further categorized as an information statement or as a behavior request. The results of the analysis are presented in Table 3-7. No behavior requests were produced by either subject. Twelve percent (19) of A.D.'s utterances were information requests. R.A. made no requests for information.

The largest single category of productions by either child was information statements. This category represented 88% (135) of A.D.'s utterances and 100% (109) of R.A.'s utterances.

In summary, A.D. produced fewer directives and fewer projectives than did his control. He produced more requests for information, interpretatives, and relationals than R.A. Both children produced more utterances in the information statements category than any other.

Verbal Turn-Taking

The following aspects of verbal turn-taking were examined: initiations, responses, and exchanges per topic.

These measures are reported in absolute values and in proportions. Child initiations of turns were statements or questions that resulted in some type of verbal response from the partner. Child responses were replies to the partner's statements or questions. Exchanges per topic were the number of verbal turns that the child engaged in while discussing a single topic. The results of the analyses are presented in Table 3-8.

Considerable differences were noted between the number of verbal initiations of turns by A.D. and R.A. A.D. initiated 2% (1) of the turns during the school activity, 8% (4) during the art activity, and 28% (20) during the garden activity. A.D.'s proportion of initiations across tasks was 14% (25). R.A. produced no initiations of turns during the school activity, however he initiated 59% (32) of the turns during the art activity, and 58% (18) of the turns during the garden activity. R.A.'s proportion of initiations across tasks was 42% (50).

The proportion of responses produced by A.D. to his partner's initiations was 98% (54) during the school activity, 93% (51) during the art activity, and 60% (26) during the garden activity. His proportion of responses was 84% (131) across all three activities. R.A.'s proportion of responses was 100% (32) during the school activity, 55% (18) during the art activity, and 57% (12) during the garden activity. His proportion of responses was 72% (91).

Differences were also observed between the children's number of utterances per turn. A.D. produced 1.05 utterances per turn during the school task, 1.04 utterances per turn during the art task, and 1.08 utterances per turn during the garden task. His mean number of utterances per turn across settings was 1.04. R.A. produced 1.94 utterances per turn during the school task, 1.2 utterances per turn during the art task, and 1.3 utterances per turn during the garden task. His mean number of utterances per turn across settings was 1.44.

Topic Manipulation. Topic initiations, on-topic exchanges, and utterances per topic measures were calculated to assess the subjects' topic manipulation skills. These measures will be reported in absolute values and in proportions. Topic initiations were those child utterances that introduced a new subject to the conversation. On-topic exchanges were those child utterances that served to continue conversation around a previously introduced subject. The number of topic initiations and on-topic exchanges was calculated for each sample. The researcher then determined the proportion of these measures by dividing the number of child-initiated topics by the total number of topics initiated. The number of on-topic exchanges produced by each child was divided by the total number of exchanges. This analysis yielded the proportion of child-initiated topics and on-topic exchanges produced by each child across settings. These results are presented in Table 3-9.

A.D. produced fewer topic initiations than did his control. He initiated no topics during the school task, 16% (3) of the topics during the art task, and 32% (12) of the topics during the garden task. A.D.'s proportion of topic initiations across settings was 23% (15). R.A. initiated no topics during the school task, 67% (4) of the topics during the art task, and 50% (7) of the topics during the garden task. R.A.'s proportion of responses across settings was 34% (11).

Differences were observed between the performances of the two children in the number of their on-topic exchanges. A.D. produced a total of 55 on-topic exchanges during the school task, 47 during the art task, and 42 during the garden task. This performance represents a proportion of 6.1 exchanges per topic during the school task, 2.5 exchanges per topic during the art task, and 1.1 exchanges per topic during the garden task. A.D.'s mean number of on-topic exchanges across tasks was 2.2. R.A. produced 32 on-topic exchanges during the school task, 45 during the art task, and 22 during the garden task. This performance represents a proportion of 2.6 exchanges per topic during the school task, 7.5 exchanges per topic during the art task, and 1.6 exchanges per topic during the garden task.

R.A.'s mean number of on-topic exchanges across settings was 3.1.

Conversational Replies. The categories used in this assessment were based on a protocol presented by Leonard (1986). The protocol examines children's verbal responses to their partner's questions, statements, and directives. Seven categories of responses to questions and eight categories of responses to statements and directives were examined. The results of the analyses are presented in Table 3-10.

A.D. and R.A. exhibited similar performances in their responses to questions and answers across tasks. Twenty-six percent (34) of A.D.'s responses were affirmative answers to yes-no questions, 7% (8) were negative responses to yes-no questions, 41% (55) were choice responses to questions, 11% (15) were clarification requests to questions, 1% (2) were affirmations to statements, 6% (5) were compliances with directives, .5% (1) were noncompliances to directives, 1% (1) were expansions of statements or directives, 2% (3) were clarification of statements or directives, and 1% (2) were imitations of statements or diirectives. Twenty-one percent (16) of R.A.'s responses were affirmative answers to yes-no questions, 6% (5) were negative responses to yes-no questions, 4% (3) were alternatives to questions, 40% (31) were choice responses to questions, 1% (1) were affirmations of statements, 6% (5) were compliances to directives, 4% (3)

were alternatives to statements or directives, and 18% (14) were expansions of statements or directives.

In summary, the subjects showed similar responses to questions and answers with a few exceptions. The most notable differences were in the areas of clarification requests to questions and expansions of statements or directives. Eleven percent of A.D.'s responses were clarification requests to questions. R.A. made no such responses. A.D.'s expansions of statements or directives represented only 1% of his responses while R.A.'s expansions represented 18% of his responses.

Communicative Repairs. Marked differences were observed between the performances of the two children relative to communicative breakdowns. The results are presented in Table 3-11. There were 18 (5%) breakdowns across the three tasks for A.D. and 2 (<.5%) breakdowns for R.A. Different strategies were employed by the children as they attempted to repair their communicative breakdowns. A.D. initiated 7 (39%) of the repair attempts when communicative breakdowns occurred while R.A. initiated 1 (50%) repair attempts. A.D was successful on 100% of his attempts and R.A. was successful on 100% of his attempts. Four (40%) of A.D.'s strategies were contingent queries (i.e. questions seeking clarification or additional information) and six (60%) were exact repetitions of the questions posed by the examiner. R.A.'s used contingent queries as his repair strategy 100% of the time.

In summary, A.D.'s sample yielded far more communicative breakdowns than did his control's. Proportionately he initiated fewer repair attempts than R.A.. When attempting to repair the breakdown, A.D. used exact repetitions 60% of the time and contingent queries 40% of the time. R.A. used contingent queries exclusively as his repair strategy.

Presupposition. The "Barrier-Task Play" activity was used to gather information concerning each child's mastery of presuppositional skills. Quantitative measures (number of turns required, number of errors) and qualitative measures (types of errors including missing referents, substitutions, deletion of descriptors, pantomimes) were used in this analysis. The results of this analysis are presented in Table 3-12.

Marked differences were observed in the performances of the two children. A.D. required 54 turns to complete the 15 tasks and R.A. required 37. A.D.'s produced 40 errors whereas R.A. produced only 5 errors. The largest single category of errors for each child was deletion of descriptors. A.D. had 23 errors in that category and R.A. had 4. A.D.'s other errors included 4 missing referents, 12 substitution errors, and 1 pantomime. R.A.'s other error was one missing referent. Substitution errors involved the child's production of the wrong referent or descriptor. Pantomimes involved the child's "acting out" of specific actions instead of giving verbal instructions. The results of this analysis are presented in Table 3.10. In summary, A.D. required far more presuppositional turns and produced far more errors than his control.

Summary. A.D. performed considerably lower than R.A. on all norm-referenced measures with the exception of auditory memory for recognition and auditory memory for content. A.D. also demonstrated lower performance than R.A. on several non-norm-referenced measures.

A.D. showed lower functioning in auditory discrimination and auditory sequential memory skills. R.A.'s auditory perceptual skills are within the normal range for his age. A.D.'s semantic and syntactic comprehension scores suggest that he is functioning far below the expected range for his age. R.A.'s scores suggest that he is functioning within the normal range for his age. A.D. also demonstrated very low functioning in expressive syntax. R.A. demonstrated ceiling performance on the expressive syntax task. Although both children's metalinguistic scores fall within the normal range for their age, A.D.'s were generally much lower than those of his control. A comparison of A.D. and R.A.'s word-finding skills could not be made because A.D. did not achieve basal performance on the comprehension section of the word-finding test. R.A. demonstrated word-finding skills that are within the normal range for his age.

Both children demonstrated normal structure and function of the oral speech mechanism. A.D. exhibited one articulation error, substitution of the /w/ for the /r/ in the initial position of words. R.A. produced no articulation errors.

A.D.'s performance in the area of semantic diversity was markedly different from R.A.'s. A.D. produced far fewer words and far fewer different words than his control. His performance falls well below the range expected for a child his age. R.A.'s performance was within the appropriate range for his age. A.D.'s TTR was considerably lower than that of his control. Both children's TTR's were below the mean expected for their age.

A.D. demonstrated considerably lower skills in the area of syntactic complexity than did his control. He produced far fewer sentences, words, morphemes, words per sentence, and complex sentences than R.A..

The children exhibited different performances in the communicative functions of the utterances they produced. A.D. used more directives, relationals, interpretatives and information requests than his control. He produced fewer directives, projectives, and information statements than did his control. Similar levels of performance were observed in the children's responses to questions. This was especially observable in their percentage of use of projectives, relationals, percentage of responses to partner utterances during the school and art tasks, affirmative and negative answers to yes-no questions, choice responses to questions, affirmations of statements, and compliance with directives. The most significant differences in the subjects' responses to questions and statements occurred in the areas of clarification requests to questions and expansions of statements or directives. A.D. produced considerably more clarification requests and far fewer expansions of statements or directives than his control.

Considerable differences were noted between the children's verbal turn-taking performances. A.D. initiated far fewer verbal turns across all tasks than R.A. He produced more responses to his partner's utterances than did R.A. Similar differences were observed in the children's topic manipulation skills. A.D. produced far fewer topic initiations and utterances per turn than did his control. His number of on-topic exchanges was also lower than that of his control.

Comparison of the subjects' communicative repair strategies was noteworthy. A.D. had more communicative breakdowns and initiated fewer repair attempts than did R.A. A.D. tended to use exact repetitions of his partner's utterances in addition to contingent queries as his repair strategies. His control used contingent queries exclusively. A.D. also demonstrated significantly lower functioning in presuppositional skills than his control. He required more presuppositional turns, had more missing referents, and produced several cohesion errors.

Table 3-1. Subject's Standard Scores on Auditory Perceptual Skills Test Battery

Auditory Subtest	Child	Raw Score	Age Equiv.	Percentile Rank	Interpretation
Discrimination	A.D.	289	7.3	5	Low for C.A.
Tests I,II, III	R.A.	297	14.2	68	High for C.A.
Auditory Memory	A.D.	99	8.2	14	Low for C.A.
(Recognition)	R.A.	99	8.2	14	Low for C.A.
Auditory Memory	A.D.	6	4.10	<1	Low for C.A.
(Content)	R.A.	13	5.11	<1	Low for C.A.
Auditory Memory	A.D.	47	9.6	30	Low for C.A.
(Sequencing)	R.A.	84	18.11	>99	High for C.A.

Table 3-2. Subject's Scores on Measures of Semantic and Syntactic Comprehension, Repetition, Metalinguistics, and Word-Finding.

Name of Test	Child	Raw Score	Converted Score	Interpretation
PPVT	A.D.	64	Age=5.6	Below Normal Range
	R.A.	113	Age=10.10	Within Normal Range
TACL				
Word Classes	A.D.	36	N/A	
	R.A.	41	N/A	
Grammatical Morphemes	A.D.	15	N/A	
	R.A.	48	N/A	
Elaborated Sentences	A.D.	9	N/A	
	R.A.	12		
Total Scores	A.D.	60	Age=4.5	Below Normal Range
	R.A.	120	Age=9.11+	Within Normal Range
TOLD				
Repetition	A.D.	15/30(50%)	Age=6.8	Below Normal Range
	R.A.	28/30(93%)	Age=>9.5	Within Normal Range
WISC				
Similarities	A.D.	11	Age=11.12	Within Normal Range
	R.A.	18	Age=15+	Within Normal Range
Token Test	A.D.	39	478,480	Below Normal Range
	R.A.	60	505,505	Within Normal Range
Word-Finding Test	A.D.	N/A	N/A	Below Normal Range
	R.A.	89	N/A	Fast/accurate namer

Table 3-3. Subjects' Frequency of Use on Standardized Measure of Lexical Diversity (The Word-Class Inventory for School-Aged Children)

Task/Activity	A.D.	R.A.	Mean	Range	Interpretation
Fifty Utterance Sample/ Total Words	190		445	362-529	Below Normal Range
		469	445	362-529	Within Normal Range
Fifty Utterance Sample/ Different Words	73		187.8	155-222	Below Normal Range
		152	187.8	155-222	Within Normal Range
Type-Token Ratio	3.74		6.29	5.76-6.83	Below Normal Range
		4.97	6.29	5.76-6.83	Below Normal Range

Table 3-4. Subjects' Frequency of Use on Measures of Lexical Diversity on Three Activities

		A.D.	R.A.
School:	Total Words	268	704
	Different Words	122	263
Art:	Total Words	179	488
	Different Words	73	115
Garden:	Total Words	203	330
	Different Words	77	127
Overall	Total Words	650	2226
Overall	Different Words	272	505

Table 3-6. Subjects' Frequency of Use on Measures of Syntactic Production

Syntactic Performance	Child	Scores Obtained
Total Number of Sentences	A.D.	108
	R.A.	137
Total Number of Words	A.D.	476
	R.A.	1385
Total Number of Morphemes	A.D.	575
	R.A.	1535
Mean Number Words/Sentence	A.D.	4.49
	R.A.	10.0
Mean Number Morphemes/Sentence	A.D.	5.4
	R.A.	11.1
Word-Morpheme Index	A.D.	4.9
	R.A.	10.5
Assigned Linguistic Level	A.D.	IV
	R.A.	VI+
Number of Complex Sentences	A.D.	14
	R.A.	64
Proportion of Complex Sentences	A.D.	12%
	R.A.	47%

Table 3-6. Subjects' Percentage of Use of Tough's Communicative Functions

	A.D.	R.A.
Directive	11%	43%
Interpretative	80%	45%
Projective	0%	4%
Relational	9%	8%

Table 3-7. Subjects' Frequency and Percentage of Use of Behavior and Information Requests and Information Statements During Three Play activities

Category	Absolute Frequency		Percentage	
	A.D.	R.A.	A.D.	R.A.
Behavior Request	0	0	0%	0%
Information Request	19	0	12%	0%
Information Statements	135	109	88%	100%

Table 3-8. Subjects' Frequency and Percentage of Use of Verbal Turn-Taking Measures During Three Play Activities

Measure	Absolute Frequency		Percentage	
	A.D	R.A.	A.D.	R.A.
Child Initiations	25	50	14%	42%
Child Responses	131	62	88%	91%
Utterances/Turn	1.04	1.44	N/A	N/A

Table 3-9. Subjects' Frequency and Percentage of Use of Topic Manipulation Measures During Three Play Activities

Measure	Absolute Frequency		Percentage	
	A.D.	R.A.	A.D.	R.A.
Topic Initiation	15	11	23%	34%
On-Topic Exchanges	144	99	54%	56%
Mean Exchanges Per Topic	2.2	3.1	N/A	N/A

Table 3-10. Subjects' Frequency and Percent of Use of Conversational Replies During Three Play Activities

Conversational Replies	Frequency		Percentage	
	A.D.	R.A.	A.D.	R.A.
Affirmatives/Yes-No Questions	34	16	26%	21%
Negatives/Yes-No Questions	8	5	7%	6%
Wh-Replacements/	0	0	0%	0%
Alternatives/Questions	0	3	0%	4%
Choice Responses/ Questions	55	31	41%	40%
Clarification Requests/ Questions	15	0	11%	0%
Repetition Requests/ Questions	0	0	0%	0%
Imitation/Questions	0	0	0%	0%
Affirmations/Statements	2	1	1%	1%
Compliance/Directives	5	5	6%	6%
Refusal/Denial/ Statements/Directives	0	0	0%	0%
Noncompliance/Directives	1	0	.5%	0%
Alternatives/Statements/ Directives	0	3	0%	4%
Expansions	2	14	1%	18%
Clarification/Statement/ Directive	3	0	2%	0%
Repetition/Statement/ Directive	0	0	0%	0%
Imitation/Statement/ Directive	2	0	1%	0%

Table 3-11. Subjects' Performance on Communicative Breakdowns

Analysis of Breakdowns	Frequency		Percentage	
	A.D.	R.A.	A.D.	R.A.
Number of Breakdowns	18	2	5%	<.5%
Contingent Queries	4	2	40%	100%
Repetition/Questions	6	0	60%	0%
Repair Attempts/Child	7	1	39%	50%
Successful Attempts/ Child	7	1	100%	100%

Table 3-12. Subjects' Frequency of Errors on the Barrier-Task

	A.D.	R.A.
Total number of turns required	54	37
Total number of missing referents	4	1
Total number of substitutions	12	0
Total number of deletions of descriptors	23	4
Total number of pantomimes	1	0
Total number of combined errors	40	5

Case Study Two

Subjects

The second case study compared the linguistic performance of two seven-year-old Black males. B.N. was the language-impaired experimental subject and D.J. was his language-normal control. Both of the children attended public schools in Gainesville, Florida.

Norm-Referenced Test Results

Auditory Perceptual Skills Battery. The Auditory Discrimination and Auditory Memory subtests from the Goldman-Fristoe-Woodcock Auditory Skills Battery were administered to assess each child's auditory perceptual abilities: Auditory Discrimination and Auditory Memory. The results of the auditory skills tests are presented in Table 3-12.

There was some variability between the performance of the two children on the auditory perceptual skills subtests. B.N. obtained a raw score of 85 on the Auditory Discrimination subtest. This score corresponds to an age equivalency of 5.11 years and places him at the eighteenth percentile. D.J. obtained a raw score of 98 on the Auditory Discrimination subtest. His score corresponds to an age equivalency of 12.2 and places him at the eighty-sixth percentile.

The Auditory Memory subtest is comprised of three segments: recognition, content, and sequencing. B.N. achieved a score on the "recognition" section of the Auditory Memory subtest which places him at the second percentile. His age equivalency was 4.9. D.J's performance on the "recognition" section of the Auditory Memory subtest yielded a raw score of 100 which corresponds to an age equivalency of 8.6 years and places him at the sixty-fourth percentile. B.N.'s raw score of 9 with its corresponding age equivalency of 5.4 on the "content" section of the Auditory Memory Subtest places him at the second percentile. D.J.'s raw score of 21 with its age equivalency of 9.5 places him at the seventy-first percentile. On the "sequencing" section, B.N. obtained a raw score of 33 and an age equivalency of 6.9 which places him at the thirtieth percentile. D.J. obtained a raw score of 76 and an age equivalency of 18.11 which places him above the ninety-ninth percentile.

In summary, B.N.'s scores on all auditory skills subtests were considerably lower than his control's. B.N.'s auditory discrimination scores placed him at the eighteenth percentile. D.J.'s scores place him at the eighty-sixth percentile. The subjects also demonstrated markedly different performances on the "recognition" section of the auditory memory subtest. B.N.'s score places him at the second percentile whereas D.J.'s scores place him at the sixty-fourth percentile. B.N. obtained scores on the "content" section of the auditory memory subtest that place him at the second percentile. D.J.'s scores place him at the seventy-first percentile. B.N.'s scores on the "sequencing" section of the auditory memory subtest place him at the thirtieth percentile while D.J.'s scores place him above the ninety-ninth percentile.

Semantic and Syntactic Comprehension. Four measures of semantic and syntactic comprehension were given to each child. The results of these norm-referenced tests are presented in Table 3-13. The subjects demonstrated similar performances on the Peabody Picture Vocabulary Test. B.N. obtained a raw score of 68 which corresponds to a standard score of 80 and a semantic comprehension age equivalent of 5.10 years. These results suggest that B.N. is slightly below the expected range for his age. D.J. obtained a raw score of 70. His score corresponded to a standard score of 83 and a semantic comprehension age equivalent of 6.0 years. D.J's scores suggest that he is also functioning slightly below the normal range for his age.

B.N. and D.J. exhibited similar performances on the Token Test for Children. B.N. received a raw score of 41 which corresponded to a standard age score of 492 and a grade score of 497. B.N.'s scores fall slightly below the expected range for a child of his age. D.J. received a raw score of 42 on the Token Test. His score corresponded with a standard age score of 492 and grade score of 497. Standard scores between 495 and 505 are considered to be within the average range. Grade scores below 494 are considered to be inferior and indicate a need for additional testing. Both children's standard scores fell within the normal range. His standard grade score was in the upper range of the first negative standard deviation.

The Test of Auditory Comprehension of Language, which measures syntactic comprehension, was used to provide further comparisons of the children's comprehension abilities. The test is comprised of three sections: Word Classes, Grammatical Morphemes, and Elaborated Sentences. The subjects performed similarly on all three test areas. B.N. obtained a raw score of 37 and D.J. obtained a raw score of 40. Both children obtained a raw score of 43 in the Grammatical Morphemes section. On the Elaborated Sentences section, B.N.'s raw score was 10 and D.J.'s raw score was 11. B.N.'s combined raw score was 90 which corresponds to a mean syntactic comprehension age of 6.9 years and D.J.'s combined raw score was 94 which corresponds to a mean syntactic comprehension age of 6.11 years.

In summary, B.N. and D.J. showed similar levels of functioning on all of the semantic and syntactic comprehension measures. The children's semantic comprehension scores suggest that they are both functioning slightly below the mean for their age. Similar performances were also observed on syntactic comprehension tasks. B.N. and D.J. both obtained scores indicating that they are functioning slightly below the range of expectation.

Repetition, Metalinguistic and Word-Finding Skills. Three measures were used to assess each child's repetition, metalinguistic, and word-finding skills. The Sentence Repetition subtest of the *Test of Language Development* was used to provide a measure of each child's expressive syntax. The Similarities subtest from the *Weschler Intelligence Scale for Children-Revised* was used to obtain information about each child's metalinguistic skills. The *Test of Word-Finding* was used to evaluate each child's word-finding skills.

Differences were observed between the two children's performances on the Sentence Repetition subtest of the *Test of Language Development*. B.N. correctly responded to 16 (53%) of the 30 test items. His score corresponds to an age equivalency of 7.1 years. D.J. correctly responded to 24 (83%) of the items. His score corresponds to an age equivalency of 9.7 years. Some variability was observed between the children's performances on the Similarities subtest of the *Weschler Intelligence Scale for Children-Revised*. B.N. obtained a raw score of 6 and an age equivalency of 7.6 years. This compared with D.J.'s raw score of 4 and an age equivalency of 6.2 years.

The *Test of Word-Finding* was used to evaluate each child's word-finding skills. B.N.'s raw score of 40 placed him in the category of a slow and inaccurate namer. D.J. obtained a raw score of 48 on the Test of Word-Finding. His performance was indicative of a profile of a slow and accurate namer.

In summary, B.N. exhibited considerably lower functioning in syntactic repetition than his control. His metalinguistic scores were slightly higher than his control's. B.N.'s metalinguistic scores place him within the expected range for his age. D.J.'s scores are just below the expected range for his age. B.N.'s performance on the *Test of Word-Finding* represented a profile of a slow and inaccurate namer. D.J.'s scores on the *Test of Word-Finding* represented a profile of a slow and accurate namer.

Oral Motor and Articulatory Skills. Three tests were used to measure the oral motor skills of the children in the present study. The *Dworkin-Culatta Oral Mechanism Examination* was used to obtain information about the structure and function of each child's oral speech mechanism. Each child demonstrated normal structure and function of the oral speech mechanism. The *Goldman-Fristoe Test of Articulation* was used to measure the accuracy of each child's production of sounds in words and in sentences. The *Kahn-Lewis Phonological Analysis* was used to evaluate each child's results on the *Goldman-Fristoe Test of Articulation* to determine the phonological processes used. The children demonstrated no articulation disorders during the production of single words and sentences. Therefore, it was not necessary to conduct a phonological analysis on these language samples.

Results of Sampling Techniques

Semantic Diversity. The *Word Class Inventory for School Age Children* (Bennett & Alter, 1985) procedure was used to determine each child's type-token ratio. A type-token ratio was calculated on the second set of 50 sentences selected from each child's syntactic analysis. These data are presented in Table 3-15.

In his 50-utterance sample, B.N. produced 191 total words and 84 different words yielding a TTR of 4.3. D.J. produced 291 total words and 99 different words yielding a TTR of 4.1. The mean number of different words that children at this age are expected to produce is 152.0 and the range is 122-183. They are expected to produce a mean total of 348.9 words with a range of 278-421. The mean expected TTR is 5.75 with a range of 5.17-6.31 Bennett & Alter, 1985). B.N.'s total number of words and total number of different words falls below the range of expectation for a child his age. D.J.'s overall total of words falls within the range of expectation for his age but his overall total of different words falls slightly below the expected range.

Both children's TTR's fall below the expected range. B.N.'s TTR of 4.3 is 1.5 standard deviations below the expected range and D.J.'s is 1.87 standard deviations below the range.

Further, each subject's TTR data was computed for all utterances produced in each of the three language activities (school, art, garden). B.N. produced 164 total words during the school activity, 184 during the art activity, and 102 during the garden activity. He produced 67 different words during the school segment, 75 during the art segment, and 54 during the garden segment. D.J. produced 515 total words during the school activity, 497 during the art activity, and 277 during the garden activity. He produced 200 different words during the school segment, 123 during the art segment, and 104 during the garden segment. There are no norms available for interpreting these data. B.N. produced fewer total words and different words in all three tasks than did his control.

In summary, B.N.'s total number of words falls below the expected mean for his age. His total number of different words was slightly below that of his control. The children obtained similar TTRs. Both children's performances were slightly below the expected range for their age.

Syntactic Complexity. Each child's expressive syntax was examined using the Language Sampling, Analysis, and Training procedure. Sentences of two or more morphemes were taken from the school, art, and garden activities and included in the sample. Unintelligible utterances were excluded from the sample. The number of words and morphemes were calculated for each sentence according to the instructions in the examiner's manual. A comparison of B.N. and D.J.'s syntactic profiles is presented in Table 3-17.

B.N.'s sample yielded 91 scorable sentences. B.J.'s sample produced 164 scorable sentences. B.N. produced 367 words and 398 morphemes in his sample. D.J. produced 1092 words and 1148 morphemes in his sample. The mean number of words per sentence was 4.0 for B.N. and 6.7 for D.J. B.N. produced an average of 4.37 morphemes per sentence and B.N. produced an average of 7.0 morphemes per sentence. Each subject's mean number of words and mean number of morphemes were added together and divided to obtain the word-morpheme index. B.N. obtained a word-morpheme index of 4.2 and D.J. obtained a word-morpheme index of 6.8. Each child was assigned to a linguistic level on the basis of his word-morpheme index. B.N. was assigned to Level IV and D.J. was assigned to Level VI+. These levels represent an attempt to objectify the current status of a child's syntactic functioning an is one of several measures that are used to obtain a precise description of the child's present productive system.

Five of B.N.'s 91 sentences, or 5%, were complex sentences. Thirty-eight of D.J.'s 164 sentences, or 23%, were complex sentences. B.N.'s sentences ranged from one word and two morphemes to twelve words and thirteen morphemes in length. D.J.'s shortest sentence contained one word and two morphemes and his longest sentence contained twenty-two words and twenty-three morphemes.

In summary, B.N.'s sample yielded fewer sentences, fewer words per sentence, fewer morphemes, and fewer complex sentences than did his control's. B.N.'s performance suggests a deficit in syntactic skills. D.J.'s performance indicates that he is functioning within the normal range for his age.

Communicative Functions. The communicative function of each child's individual utterances was determined using Tough's (1977) system. Each utterance was coded as fulfilling one of four communicative functions: directives, interpretatives, projectives, and relationals. These data represent all utterances from the school, art, and gardening samples combined.

The results of the analyses are presented in Table 3-18. Each utterance was further categorized as an information statement or as a behavior request. The results of this analysis are presented in Table 3-17. Some variability was observed between the subjects' performance in the directives category. Twenty-two percent of B.N.'s productions were directives and 40% of D.J.'s production were directives. The subjects also showed differences in their use of interpretatives. Sixty-two percent of B.N.'s utterances fell into that category while 32% of D.J.'s utterances were interpretatives. Both children used a very low rate of projectives. One percent of B.N. and D.J.'s utterances were considered to fall into that category. B.N. and D.J. showed similarly low performances in the relationals category. Fourteen percent of B.N.'s utterances were relationals while twenty-two percent of D.J.'s productions were relationals.

Each utterance was further categorized as an information statement, an information request, or a behavior request. The results of the analyses are presented in Table 3-19. The subjects performed similarly on their use of these functions. No behavior requests were produced by either subject. Six percent of B.N.'s utterances were information requests. Three percent of D.J.'s utterances were requests for information. The largest single category of productions by either child was information statements. This category represented 94% of B.N.'s utterances and 97% of D.J.'s utterances.

Verbal Turn-Taking

The following aspects of verbal turn-taking were examined: initiations, responses, and exchanges per topic. These measures are reported in absolute values and in proportions. Child initiations of turns were statements or questions that resulted in some type of verbal response from the partner. Child responses were replies to the partner's statements or questions. Exchanges per topic were the number of verbal turns that the child engaged in while discussing a single topic. The results of the analyses are presented in Table 3-20.

Similar performances were noted between the number of verbal initiations of turns by B.N. and D.J. B.N. initiated 16% (9) of the turns during the school activity, 42% (27) during the art activity, and 55% (16) during the garden activity. B.N.'s proportion of initiation of turns across tasks was 35% (52). D.J. initiated 4% (2) of the turns during the school activity, 38% (36) of the turns during the art activity, and 20% (11) of the turns during the garden activity. D.J.'s proportion of initiation of turns across tasks was 24% (49).

The proportion of responses produced by B.N. to his partner's initiations was 74% (35) during the school activity, 34% (13) during the art activity, and 100% (15) during the garden activity. His proportion of responses was 64% (63) across all three activities. D.J.'s proportion of responses was 90% (46) during the school activity, 93% (55) during the art activity, and 88% (40) during the garden activity. His proportion of responses was 91% (141). Similarities were observed between the children's number of utterances per turn. B.N. produced 1 utterance per turn during the school task, 1.01 utterances per turn during the art task, and 1 utterance per turn during the garden task. His mean number of utterances per turn across settings was 1.0. D.J. produced 1.2 utterances per turn during the school task, 1.1 utterances per turn during the art task, and 1.1 utterances per turn during the garden task. His mean number of utterances per turn across settings was 1.1.

Topic Manipulation. Topic initiations, on-topic exchanges, and utterances per topic measures were calculated to assess the subjects topic manipulation abilities. These measures are reported in absolute values and in proportions. Topic initiations were those child utterances that introduced a new subject to the conversation. On-topic exchanges were those child utterances that served to continue conversation around a previously introduced subject. The results across settings for these measures are presented in Table 3-21.

B.N. produced more topic initiations than did his control. He initiated 5% (1) of the topics during the school task, 70% (14) of the topics during the art task, and

44% (12) of the topics during the garden task. B.N.'s proportion of topic initiations across settings was 42% (27). D.J. initiated no topics during the school task, 75% (12) of the topics during the art task, and 20% (11) of the topics during the garden task. D.J.'s proportion of topic initiations across settings was 31% (16).

Differences were also observed between the performances of the two children in the number of their on-topic exchanges. B.N. produced a total of 43 on-topic exchanges during the school task, 27 during the art task, and 17 during the garden task. This performance represents a proportion of 2.4 exchanges per topic during the school task, 1.35 exchanges per topic during the art task, and .6 exchanges per topic during the garden task. B.N.'s mean number of on-topic exchanges across tasks was 1.3. D.J. produced 45 on-topic exchanges per topic during the school task, 72 during the art task, and 47 during the garden task. This performance represents a proportion of 2.8 exchanges per topic during the school task, 4.5 exchanges per topic during the art task, and 2.4 exchanges per topic during the garden task. D.J.'s mean number of on-topic exchanges across settings was 3.2.

Conversational Replies. The categories used in this assessment were bases on a protocol presented by Leonard (1986). The protocol examines children's verbal responses to their partner's questions, statements, and directives.

Seven categories of responses to questions and eight categories of responses to statements and directives were examined. The results of the analyses are presented in Table 3-22.

B.N. and D.J. exhibited similar performances in their responses to questions and answers across tasks. Twenty-three percent (20) of B.N.'s responses were affirmative answers to yes-no questions, 2% (2) were alternatives to questions, 2% (2) were negative responses to yes-no questions, 42% (36) were choice responses to questions, 2% (2) were clarification requests to questions, 5% (4) were affirmations to statements, 7% (6) were compliances with directives, 2% (2) were noncompliance with directives, 2% (2) were expansions of statements or directives, 6% (5) were clarification of statements or directives, and 5% (4) were repetitions of statements or directives. Twenty percent (29) of D.J.'s responses were affirmative answers to yes-no questions, 6% (8) were negative responses to yes-no questions, 5% (7) were alternatives to questions, 53% (77) were choice responses to questions, 3% (5) were clarification requests to questions, less than 1% (1) were affirmations of statements, 7% (10) were compliances to directives, less than 1% (1) were alternatives to statements or directives, and 3% (5) were expansions of statements or directives. Less than one percent (1) of his responses were clarifications of statements or directives.

In summary, the subjects showed similar responses to questions and answers across several categories. Both children produced more utterances in the choice responses to questions category.

Communicative Repairs. Similar differences were observed between the performances of the two children relative to communicative breakdowns. The results are presented in Table 3-22. There were 3 breakdowns across the three tasks for B.N. and 4 breakdowns for D.J. Different strategies were employed by the children as they attempted to repair their communicative breakdowns. B.N. initiated none (0%) of the repair attempts when communicative breakdowns occurred while D.J. initiated 2 (50%) of the repair attempts. D.J. was successful on 100% of his attempts. All of B.N's repair strategies were exact repetitions of the questions posed by the examiner. D.J. used contingent queries 100% of the time.

In summary, the children produced a similar number of communicative breakdowns. Marked differences were observed in the performances of the two children in the way they attempted to repair the breakdowns when they occurred. B.N. made no attempts to repair the breakdowns while D.J. attempted to repair 50% (2) of the breakdowns. Although B.N. did not initiate any repair attempts, when the experimenter attempted to facilitate a repair attempt, B.N. used exact repetitions of his previous utterance as his contribution to the communicative repair. He did not modify his prior utterance in order to provide more information or clarification. D.J. used contingent queries exclusively as his repair strategy.

Presupposition. The "Barrier-Task Play" activity was used to gather information concerning each child's mastery of presuppositional skills. The results of this analysis are presented in Table 3-24.

Marked differences were observed in the performances of the two children. B.N. required 84 turns to complete the 15 tasks and D.J. required 100. B.N.'s error type analysis revealed 43 errors while D.J.'s showed 26 errors. Both children produced a large number of errors in the deletion of descriptors category. B.N. had 18 errors in that category and D.J. had 15. B.N.'s other errors included 21 missing referents and 4 substitution errors. D.J.'s other errors included 7 missing referents, 3 substitution errors, and 1 pantomime. Substitution errors involved the child's production of the wrong referent or descriptor. Pantomimes involved the child's "acting out" of specific actions instead of giving verbal instructions.

In summary, B.N. required fewer presuppositional turns than his control; however, he produced far more errors than did D.J. The most frequent error type for both children was deletion of descriptors.

Summary. B.N. showed lower functioning in three auditory perceptual skills; auditory discrimination, auditory memory for content, and auditory sequential memory. B.N.'s scores on all of these subtests were below the expected range for his age. D.J.'s scores on the auditory perceptual subtests were well within the normal range for his age. The subjects demonstrated only slight differences in their semantic and syntactic comprehension skills. Both children's age equivalency scores fell slightly below the normal range on most of the measures. One exception was observed in the performance of the children on the sentence repetition task. B.N.'s percentage of correct responses was considerably lower than D.J.'s. B.N.'s metalinguistic scores were generally higher than those of his control. The subject's word-finding profiles were slightly different. B.N. was labeled a slow and inaccurate namer and D.J. was labeled a slow and accurate namer.

B.N.'s performance in the area of semantic diversity was moderately different from D.J.'s. B.N. produced far fewer words and fewer different words than his control. His number of total words and number of different words fell well below the range expected for a child his age. Similarly, D.J.'s number of different words fell below the expected range for his age but his number of total words was within the normal range. Both children's TTRs were below the mean expected for their age.

B.N. demonstrated considerably lower skills in the area of syntactic complexity than did his control. He produced fewer morphemes, fewer sentences, shorter sentences, and fewer complex sentences than did D.J.

Several differences were observed between the children use of communicative functions. B.N. used less than half as many directives and relationals as D.J. but more information statements and interpretatives. No behavior requests were made by either child. The subjects demonstrated similar performances across categories in their responses to questions and statements. Both children produced their largest number of responses in the choice responses to questions category. B.N. and D.J. obtained scores in the other categories that were within four percentage points of each other.

B.N. initiated more turns than D.J. but responded to far fewer of his partner's initiations. B.N. also initiated slightly more turns than his control. However, he tended to stay on each topic for fewer turns. The subjects produced a similar number of utterances per turn.

Comparison of the subject's samples revealed a similar number of communicative breakdowns. Differences occurred in the strategies employed by the children as they attempted to repair the breakdowns. B.N. initiated no repair attempts while D.J. initiated 50% of the repair attempts when breakdowns occurred. When his partner initiated a repair

Comparison of the subject's samples revealed a similar number of communicative breakdowns. Differences occurred in the strategies employed by the children as they attempted to repair the breakdowns. B.N. initiated no repair attempts while D.J. initiated 50% of the repair attempts when breakdowns occurred. When his partner initiated a repair attempt, B.N. responded by using repetitions of the questions posed by the examiner as his repair strategy. D.J. used contingent queries as his repair strategy. The subjects also showed differences in the level of their presuppositional skills. B.N. required fewer presuppositional turns but produced considerably more errors than did his control. B.N. produced far fewer referents and showed more cohesion errors than D.J.

Table 3-13. Subjects' Standard Scores on Auditory Perceptual Skills Test Battery

Auditory Subtest	Child	Raw Score	Age Equiv.	Percentile Rank	Interpretation
Discrimination Test	B.N.	85	5.11	18	Low for C.A.
	D.J.	98	12.2	86	High for C.A.
Auditory Memory	B.N.	57	4.9	2	Low for A.
(Recognition)	D.J.	100	8.6	64	High for C.A.
Auditory Memory (Content)	B.N.	9	5.4	2	Low for C.A.
	D.J.	21	9.5	71	High for C.A.
Auditory Memory (Sequencing)	B.N.	33	6.9	30	Low for C.A.
	D.J.	76	18.11	>99	High for C.A.

Table 3-14. Subjects' Scores on Measures of Semantic and Syntactic Comprehension, Repetition, Metalinguistics, and Word-Finding

Name of Test	Child	Raw Score	Converted Score	Interpretation
PPVT	B.N.	68	Age=5.1	Below Normal Range
	D.J.	70	Age=6.0	Below Normal Range
TACL				
Word Classes	B.N.	37	N/A	
	D.J.	41	N/A	
Grammatical Morphemes	B.N.	43	N/A	
	D.J.	43	N/A	
Elaborated Sentences	B.N.	10	N/A	
	D.J.	11	N/A	
Total Score	B.N	90	Age=6.9	Below Normal Range
	D.J.	94	Age=6.11	Below Normal Range
TOLD				
Repetition	B.N.	16/30(53%)	Age=7.1	Within Normal Range
	D.J.	24/30(80%)	Age=9.7	Within Normal Range
WISC				
Similarities	B.N.	6	Age=7.6	Within Normal Range
	D.J.	4	Age=6.2	Below Normal Range
Token Test	B.N.	41	492, 497	Within Normal Range
	D.J.	42	490, 484	Below Normal Range
Word-Finding Test	B.N.	40	N/A	Slow/inaccurate namer
	D.J.	48	N/A	Slow/accurate namer

Table 3-15. Subjects' Frequency of Use on Standardized Measure of Lexical Diversity (The Word-Class Inventory for School-Aged Children)

Task/Activity	B.N.	D.J.	Mean	Range	Interpretation
Fifty Utterance Sample/ Total Words	191		348.9	278-421	Below Normal Range
		291	348.9	278-421	Within Normal Range
Fifty Utterance Sample/ Different Words	84		152.0	122-183	Below Normal Range
		99	152.0	122-183	Below Normal Range
Type-token ratio	4.3		5.75	5.17-6.31	Below Normal Range
		4.1	5.75	5.17-6.31	Below Normal Range

Table 3-16. Subjects' Frequency of Use on Measures of Lexical Diversity in Three Activities

		B.N.	D.J.
School:	Total Words	164	515
	Different Words	67	200
Art:	Total Words	184	497
	Different Words	75	123
Garden:	Total Words	102	277
	Different Words	54	104
Overall	Total Words	450	1289
Overall	Different Words	196	427

Table 3-17. Subjects' Frequency of Use of Measures of Syntactic Production During Three Activities

Syntactic Performance	Child	Scores Obtained
Total Number of Sentences	B.N.	91
	D.J.	164
Total Number of Words	B.N.	367
	D.J.	1092
Total Number of Morphemes	B.N.	398
	D.J.	1148
Mean Number Words/Sentence	B.N.	4.0
	D.J.	6.7
Mean Number Morphemes/Sentence	B.N.	4.37
	D.J.	7.0
Word-Morpheme Index	B.N.	4.2
	D.J.	6.8
Assigned Linguistic Level	B.N.	IV
	D.J.	VI+
Number of Complex Sentences	B.N.	5
	D.J.	38
Proportion of Complex Sentences	B.N.	5%
	D.J.	23%

Table 3-18. Subjects' Percentage of Use of Tough's Communicative Functions

	B.N.	D.J.
Directive	22%	40%
Interpretative	62%	32%
Projective	1%	1%
Relational	14%	22%

Table 3-19. Subject's Frequency and Percentage of Behavior and Information Requests and Information Statements During Three Activities

Category	Absolute Frequency		Percentage	
	B.N.	D.J.	B.N.	D.J.
Behavior Request	0	0	0%	0%
Information Request	8	6	6%	3%
Information Statement	125	183	94%	97%

Table 3-20. Subjects' Frequency and Percentage of Verbal Turn-Taking Measures During Three Activities

Measure	Absolute Frequency		Percentage	
	B.N.	D.J.	B.N.	D.J.
Child Initiations	52	49	35%	24%
Child Responses	63	141	64%	91%
Utterances/Turn	1.0	1.1	N/A	N/A

Table 3-21. Subjects' Frequency and Percent of Topic Manipulation Measures During Three Activities

Measure	Absolute Frequency		Percentage	
	B.N.	D.J.	B.N.	D.J.
Topic Initiation	27	16	42%	31%
Topic Exchanges	87	164	45%	51%
Proportion/Exchanges	1.3	3.2	N/A	N/A

Table 3-22. Subjects' Use of Conversational Replies During Three Activities

Conversational Replies	Number		Percentage	
	B.N.	D.J.	B.N.	D.J.
Affirmatives/Yes-No	20	29	23%	20%
Negatives/Yes-No Questions	2	8	2%	6%
Wh-Replacements	0	0	0%	0%
Alternatives/Questions	2	7	2%	5%
Choice Responses/ Questions	36	77	42%	53%
Clarification Requests/ Questions	2	5	2%	3%
Repetition Requests/ Questions	0	0	0%	0%
Imitation/Questions	0	0	0%	0%
Affirmations/Statements	4	1	5%	<1%
Compliance/Directives	6	10	7%	7%
Refusal/Denial/ Statements/Directives	0	1	0%	<1%
Noncompliance/Directives	2	0	2%	0%
Alternatives/Statements/ Directives	1	1	1%	<1%
Expansions	2	5	2%	3%
Clarification/Statement/ Directive	5	1	6%	<1%
Repetition/Statement/ Directive	4	0	5%	0%
Imitation/Statement/ Directive	0	0	0%	0%

Table 3-23. Subjects' Frequency and Percentage of Communicative Breakdowns During Three Activities

Analysis of Breakdowns	Number		Percentage	
	B.N.	D.J.	B.N.	D.J.
Number of Breakdowns	3	4	N/A	N/A
Contingent Queries	0	2	0	100
Repetition/Questions	4	0	100	0
Repair Attempts/Child	0	2	0	50
Successful Attempts/ Child	0	2	0	100

Table 3-24. Subject's Frequency and Percentage of Measures on the Barrier-Task

	B.N.	D.J.
Total number of turns required	84	100
Total number of missing referents	21	7
Total number of substitutions	4	3
Total number of deletions of descriptors	18	15
Total number of pantomimes	0	1
Total number of combined errors	43	26

Case Study Three

Subjects

The third case study compared the linguistic performance of two seven-year-old Black males. T.M. was the language-impaired experimental subject and G.N. was his language-normal control. Both of the children attended public schools in Gainesville, Florida.

Norm-Referenced Test Results

Six norm-referenced tests were administered to each child. The results of the auditory perceptual skills tests are presented in Table 3-25. All other norm-referenced test results are presented in Table 3-24.

Auditory Perceptual Skills Battery. Two subtests from the Goldman-Fristoe-Woodcock Auditory Skills Battery were administered to assess each child's auditory perceptual abilities: Auditory Discrimination and Auditory Memory.

There was some variability between the performance of the two children on the auditory perceptual skills subtests. T.M. obtained a raw score of 79 on the Auditory Discrimination subtest. This score corresponds to an age equivalency of 4.1 years and places him below the first percentile. G.N. obtained a raw score of 99 on the Auditory Discrimination subtest. His score corresponds to an age equivalency of 9.5 years and places him at the ninety-seventh percentile.

Auditory Memory has three segments: recognition, content, and sequencing. T.M. obtained a raw score of 67 on the "recognition" section of the Auditory Memory subtest. This score corresponds to an age equivalency of 5.0 years and places him at the fourth percentile. G.N's performance on the "recognition" section of the Auditory Memory subtest yielded a raw score of 98 which corresponds to an age equivalency of 8.2 years and places him at the fifty-fourth percentile. Considerable differences were observed in the performances of the children on the "content" section of the Auditory Memory subtest. T.M.'s raw score of 9 with its corresponding age equivalency of 5.4 years places him at the second percentile. G.N.'s raw score of 23 with its age equivalency of 11.8 years places him at the eighty-sixth percentile. The subjects showed considerable variability in their performances on the "sequencing" subtest. T.M. obtained a raw score of 28 and an age equivalency of 6.0 years which places him at the sixteenth percentile. G.N. obtained a raw score of 53 and an age equivalency of 11.6 years which places him at the ninety-fourth percentile.

In summary, marked differences were observed between the subjects' performances on the auditory skills subtests. T.M.'s scores were lower than the range of expectation for a child his age in each of the subtests. G.N.'s scores on all of the subtests were well within and beyond the normal range expected for his age.

Semantic and Syntactic Comprehension. Four measures of semantic and syntactic comprehension were given to each child. The subjects demonstrated noteworthy differences in their performances on the Peabody Picture Vocabulary Test. T.M. obtained a raw score of 67 which corresponds to a semantic comprehension age equivalent of 5.9 years. These results suggest that T.M. is functioning considerably below the expected range for his age. G.N. obtained a raw score of 82. His score corresponds to a semantic comprehension age equivalent of 7.0. G.N's scores suggest that he is functioning within the normal range for his age.

T.M. and G.N. exhibited significant differences on the Token Test for Children. T.M. received a raw score of 41 which corresponds to a standard age score of 489 and a grade score of 488. T.M.'s scores fall below the expected range for a child of his age. G.N. received a raw score of 47. His score corresponds with a standard age score of 495 and grade score of 497. His scores fall within the high range of normalcy for his age group. Standard scores between 495 and 505 are considered to be within the average range. Scores below 494 are considered to be inferior and indicate a need for additional testing in the area of semantics and syntax. Those children scoring in the range of the second negative standard deviation will have scored more poorly than approximately 84% of the standardizing group of children. T.M.'s scores place him in the second negative standard deviation range. Therefore, T.M.'s scores are suggestive of a significant deficit in the area of semantics and syntax. G.N.'s scores fall within the normal range for a child his age.

The Test of Auditory Comprehension of Language , which measures syntactic comprehension, was used to provide further comparisons of the children's comprehension abilities. The test is comprised of three sections: Word Classes, Grammatical Morphemes, and Elaborated Sentences. The subjects performed similarly in the Word Classes category. T.M. obtained a raw score of 34 while G.N.'s raw score was 38. T.M. obtained a raw score of 33 in the Grammatical Morphemes section and G.N. achieved a raw score of 38. The children showed greatest differences in the Elaborated Sentences section. T.M. obtained a raw score of 20 while G.N.'s raw score was 38. T.M.'s combined raw scores corresponds to a mean syntactic comprehension age 6.3. G.N.'s combined raw scores corresponded to a mean syntactic comprehension age of 6.11.

In summary, T.M. demonstrated markedly lower functioning in the area of semantic comprehension than did his control. T.M.'s semantic comprehension scores suggest that he is functioning below two standard deviations from the mean for his age. G.N.'s semantic comprehension scores were within the normal range for his age. T.M. and G.N.'s scores on one measure indicate that both children's comprehension of syntactic structure is slightly below the expected mean for their age.

Repetition, Metalinguistic and Word-Finding Skills. Differences were observed between the two children's performances on the Sentence Repetition subtest of the Test of Language Development. T.M. correctly responded to 14 (47%) of the total items. His score corresponds to an age equivalency of 6.4 years. G.N. correctly responded to 20 (75%) of the items. His score corresponds to an age equivalency of 8.6.

Some variability was observed between the children's performances on the Similarities subtest of the Weschler Intelligence Scale for Children-Revised. T.M. obtained a raw score of 5 and an age equivalency of 6.10 years. G.N. achieved a raw score of 6 and an age equivalency of 7.1 years.

T.M.'s performance on the Test of Word-Finding resulted in a raw score of 46 and a profile of a slow and inaccurate namer. G.N. obtained a raw score of 47. His performance presented a profile of a slow and accurate namer.

In summary, T.M. exhibited lower functioning in repetition, metalinguistic, and word-finding skills than his control. T.M.'s scores suggest a deficit in expressive syntax.

Oral Motor and Articulatory Skills. The Dworkin-Culatta Oral Mechanism Examination was used to obtain information about the structure and function of each child's oral speech mechanism. Each child demonstrated normal structure and function of the oral speech mechanism. The Goldman-Fristoe Test of Articulation was used to measure the accuracy of each child's production of sounds in words and in sentences. Phonological analysis of T.M.'s misarticulations revealed a mild disorder characterized primarily by gliding. There were no articulation errors in G.N.'s sample. G.N. also exhibited some dialectal features. The children's dialectal features did not interfere with the intelligibility of their speech.

Results of Sampling Techniques

Semantic Diversity. The Word Class Inventory for School Age Children procedure was used to determine each child's type-token ratio. A type-token ratio was calculated following the rules suggested by Bennett and Alter (1985). The second set of 50 sentences were selected from each child's syntactic analysis. When a sample did not contain at least 100 sentences, the last 50 sentences were used. These data are presented in Table 3-27.

In his 50-utterance sample, T.M. produced 228 total words and 76 different words yielding a TTR of 3.56. G.N. produced a total of 274 words and 108 different words yielding a TTR of 4.6. The mean number of different words that children at this age are expected to produce is 152 with a range of 122-183 words. The mean total number of words expected is 348.9 with a range of 278-421 words (Bennett & Alter, 1985). The mean expected TTR is 5.75 with a range of 5.17-6.31. T.M.'s total number of words and total number of different words fall well below the range expected for a child his age. G.N.'s overall total number of words and total number of different words were also below the expected range. Both children's TTRs fell below the expected range. T.M.'s TTR is 2.8 standard deviations below the expected mean and G.N.'s TTR is 1 standard deviation below the range.

Further, each subjects TTR data was computed for all utterances produced in each of the three language activities (school, art, garden). T.M. produced 224 total words during the school activity, 191 during the art activity, and 51 during the garden activity. He produced 112 different words during the school segment, 60 during the art segment, and 37 during the garden segment. G.N. produced 241 total words during the school activity, 313 during the art activity, and 94 during the garden activity. He produced 122 different words during the school segment, 92 during the art segment, and 86 during the garden segment. T.M. produced fewer total words and different words in all three tasks than did his control.

In summary, T.M.'s total number of words and total number of different words falls below the range expected for a child his age. G.N.'s total number of words and total number of different words also falls below the normal range. Both children's TTRs fell below the expected range for their age. T.M. produced fewer total words and fewer different words across all tasks.

Syntactic Complexity. Each child's expressive syntax was examined using the Language Sampling, Analysis, and Training procedure. Sentences of two or more morphemes were taken from the school, art, and garden activities and included in the sample. Unintelligible utterances were excluded from the sample. The number of words and morphemes were calculated for each sentence according to the instructions in the examiner's manual. A comparison of T.M. and G.N.'s syntactic profiles is presented in Table 3-29.

T.M.'s sample yielded 77 scorable sentences. G.N.'s sample yielded 106 scorable sentences. T.M. produced 424 words and 447 morphemes in his sample. G.N. produced 679 words and 726 morphemes in his sample. The mean number of words per sentence was 5.5 for A.D. and 6.4 for G.N. T.M. produced an average of 5.8 morphemes per sentence and G.N. produced an average of 6.8 morphemes per sentence. Each subject's mean number of words and mean number of morphemes were added together and divided to obtain the word-morpheme index. T.M. obtained a word-morpheme index of 5.6 and G.N. obtained a word-morpheme index of 6.6. Each child was assigned to a linguistic level on the basis of his word-morpheme index. T.M. was assigned to Level V and G.N. was assigned to Level VI. These levels represent an attempt to objectify the current status of a child's syntactic functioning and is one of several measures that are used to obtain a precise description of the child's present productive system.

Fourteen (18%) of T.M.'s 77 sentences were complex sentences. Twenty-four (23%) of G.N.'s 106 sentences were complex sentences. T.M.'s sentences ranged from one word and two morphemes to nineteen words and nineteen morphemes in length. G.N.'s shortest sentence contained one word and two morphemes and his longest sentence contained thirty-two words and thirty-six morphemes.

In summary, T.M.'s sample yielded fewer sentences, fewer morphemes, fewer words per sentence, and fewer complex sentences than his control. T.M.'s performance suggests a deficit in expressive syntax. G.N.'s performance was within the expected range for his age.

Communicative Functions. These data represent all utterances from the school, art, and gardening samples combined. The communicative function of each child's individual utterances was determined using Tough's (1977) system. Each utterance was coded as fulfilling one of four communicative functions: directives, interpretatives, projectives, and relationals. The results of the analyses are presented in Table 3-30. The subjects demonstrated similar performance in the directives category. Forty-six percent of T.M.'s productions were directives and 50% of G.N.'s production were directives. The subjects showed differences in their use of interpretatives. Forty-four percent of T.M.'s utterances fell into that category while 22% of G.N.'s utterances were interpretatives. Both children used a very low rate of projectives. One percent of T.M.'s productions were projectives and 4% of G.N.'s utterances were considered to be in that category. T.M.'s scores were slightly lower than G.N.'s in the relationals category. Eight percent of T.M.'s utterances were relationals while twenty percent of G.N.'s productions were relationals.

Each utterance was further categorized as an information statement, an information request, or a behavior request. The results of the analyses are presented in Table 3-31. No behavior requests were produced by either subject. Six percent (5) of T.M.'s utterances were information requests. One (2) percent of G.N.'s utterances were requests for information. The largest single category of productions by either child was information statements.

This category represented 94% (84) of T.M.'s utterances and 99% (132) of G.N.'s utterances.

In summary, both children used similar rates of directives and projectives. T.M. used considerably more interpretatives than B.N. He also used more information requests but fewer relationals. The largest single category for both children was information statements. Neither child used behavior requests.

Verbal Turn-Taking

The following aspects of verbal turn-taking were examined: initiations, responses, and exchanges per topic. These measures are reported in absolute values and in proportions. Child initiations of turns were statements or questions that resulted in some type of verbal response from the partner. Child responses were replies to the partner's statements or questions. Exchanges per topic were the number of verbal turns that the child engaged in while discussing a single topic. The results of the analyses are presented in Table 3-32.

Differences were noted between the number of verbal initiations of turns by T.M. and G.N. T.M. initiated 8% (4) of the turns during the school activity, 31% (17) during the art activity, and 13% (2) during the garden activity. Nineteen percent (23) of the turns across all three activities were initiated by T.M. G.N. initiated 6% (2) of the turns during the school activity, 36% (26) of the turns during the art activity, and 29% (10) of the turns during the garden activity. Twenty-six percent (38) of the total turns across all three activities were initiated by G.N.

The proportion of responses produced by T.M. to his partner's initiations was 70% (29) during the school activity, 66% (25) during the art activity, and 64% (9) during the garden activity. His proportion of responses was 68% (63) across all three activities. G.N.'s proportion of responses was 29% (87) during the school activity, 91% (42) during the art activity, and 72% (18) during the garden activity. His proportion of responses across all three activities was 86% (89). In summary, T.M. initiated fewer turns and responded to far fewer of his partner's initiations than did his control.

Differences were also observed between the children's number of utterances per turn. T.M. produced 1.05 utterances per turn during the school task, 1 utterance per turn during the art task, and 1 utterance per turn during the garden task. His mean number of utterances per turn across settings was 1.0. G.N. produced 1.03 utterances per turn during the school task, 1 utterance per turn during the art task, and 1 utterance per turn during the garden task. His mean number of utterances per turn across settings was 1.0.

Topic Manipulation. Topic initiations, on-topic exchanges, and utterances per topic measures were calculated to assess the subjects' topic manipulation abilities. These measures will be reported in absolute values and in proportions. Topic initiations were those child utterances that introduced a new subject to the conversation. On-topic exchanges were those child utterances that served to continue conversation around a previously introduced subject. The means across settings for these measures are presented in Table 3-33.

T.M. produced far fewer topic initiations than did his control. He initiated no topics during the school task, 43% (3) of the topics during the art task, and 17% (1) of the topics during the garden task. T.M.'s proportion of topic initiations across settings was 4% (4). G.N. initiated 9% (1) of the topics during the school task, 69% (9) of the topics during the art task, and 13% (2) of the topics during the garden task. G.N.'s proportion of topic initiations across settings was 26% (12).

Differences were also observed between the performances of the two children in the number of their on-topic exchanges. T.M. produced 35 on-topic exchanges during the school task, 37 during the art task, and 10 during the garden task. This performance represents a proportion of 2.3 exchanges per topic during the school task, 9.3 exchanges per topic during the art task, and 2.0 exchanges per topic during the garden task. T.M.'s mean number of on-topic exchanges across settings was 3.42. G.N. produced 20 on-topic exchanges per topic during the school task, 60 during the art task, and 16 during the garden task. This performance represents a proportion of 1.6 exchanges per topic during the school task, 4.6 exchanges per topic during the art task, and 1.07 exchanges per topic during the garden task. G.N.'s mean number of on-topic exchanges across settings was 2.4.

In summary, T.M. produced fewer topic initiations. His number of on-topic exchanges was considerably lower than his control's. T.M. also produced fewer utterances per turn than G.N..

Conversational Replies. The categories used in this assessment were based on a protocol discussed by Leonard (1986). The protocol examines children's verbal responses to their partner's questions, statements, and directives. Seven categories of responses to questions and eight categories of responses to statements and directives were examined. The results of the analyses are presented in Table 3-34.

T.M. and G.N. exhibited several differences in their performances in their responses to questions and answers across asks. Four percent (3) of T.M.'s responses were affirmative answers to yes-no questions, 3% (2) were negative responses to yes-no questions, 1% (1) were alternatives to questions, 60% (47) were choice responses to questions, 6% (5) were clarification requests to questions, 3% (2) were affirmations to statements, 12% (9) were compliances with directives, and 12% (9) were expansions of statements or directives. Seventeen percent (16) of G.N.'s responses were affirmative answers to yes-no questions, 1% (1) were negative responses to yes-no questions, 6% (6) were alternatives to questions, 46% (43) were choice responses to questions, 1% (1) were clarification requests to questions, 3% were affirmations of statements, 13% (13) were compliances to directives, 3% (3) were refusals or denials of statements or directives, 9% (8) were expansions of statements or directives, and 1% (1) were clarifications of statements or directives.

In summary, the subjects showed different responses to questions and answers with a few exceptions. The greatest differences were seen in the clarification requests to questions category. Four percent of T.M.'s responses were clarification requests to questions. Seventeen percent of G.N.'s responses were in that category. The largest single category of responses for both children was choice responses to questions. Sixty percent of T.M.'s responses and 46% of G.N.'s responses were in that category. T.M. produced far fewer affirmative answers to yes-no questions. Both children produced more utterances in the choice responses to questions category than in any other.

Communicative Repairs. Similar performances were observed between the two children relative to communicative breakdowns. Only slight differences were noted relative to the nature of the repair strategies employed by the children when communicative breakdowns occurred. T.M.'s sample revealed 5 breakdowns across the three tasks with T.M. and G.N.'s showed 4 breakdowns. T.M. initiated 4 (80%) of the repair attempts when communicative breakdowns occurred while G.N. initiated 1 (25%) of the repair attempts. T.M. and G.N. were both successful on 100% of their repair attempts. Eighty percent of T.M.'s strategies were contingent queries and 20% were repetitions of the questions posed by the examiner. G.N. used contingent queries 100% of the time. These results are presented in Table 3-32.

In summary, analysis of the subjects' samples revealed a similar number of communicative breakdowns. T.M. initiated a far larger percentage of repair attempts than did his control. He used repetitions and contingent queries as his repair strategies. G.N. used contingent queries exclusively as his repair strategy.

Presupposition. The "Barrier-Task Play" activity was used to gather information concerning each child's mastery of presuppositional skills. The results of this analysis are presented in Table 3-33.

Marked differences were observed in the performances of the two children. T.M. required 62 turns to complete the 15 tasks and R.A. required 54. T.M.'s qualitative error analysis revealed 72 errors while G.N.'s showed only 10 errors. The largest single category of errors for T.M. was missing referents. He had 43 errors in that category and G.N. had 5. T.M.'s other errors included 28 deletions of descriptors. G.N. exhibited 4 deletions of descriptors. Substitution errors involved the child's production of the wrong referent or descriptor. This analysis shows that T.M. required more turns per task and produced far more errors than did his control. In summary, T.M. required more presuppositional turns and produced far more errore than G.N.

Summary. Marked differences were observed between the subjects' performances on the auditory skills subtests. T.M.'s scores were lower than the range of expectation for a child his age in each category. D.J.'s scores on all of the subtests were within the normal range.

Considerable differences were also observed in the subjects' semantic and syntactic comprehension skills. T.M.'s semantic comprehension scores suggest that he is functioning two standard deviations below the mean for his age. G.N.'s semantic comprehension scores were within the normal range for his age. Both children's performances indicate comprehension of syntactic structure that is slightly below the expected mean for their age.

T.M. exhibited lower functioning than G.N. in repetition, metalinguistic, and word-finding skills. T.M.'s performance is suggestive of a deficit in expressive syntax. T.M. exhibited a profile of a slow and inaccurate namer. G.N.'s performance represented a profile of a slow and accurate namer.

Differences were observed in the children's articulatory skills. T.M. had a mild phonological disorder characterized by gliding. G.N. produced no articulatory errors. Both children exhibit exhibited normal structure and function of the oral speech mechanism.

The children also exhibited differences in their lexical diversity. T.M. produced fewer total words and fewer different words across all tasks. Both children's TTRs were below the expected mean for their age.

T.M. showed lower functioning than G.N. in syntactic expression. T.M.'s sample yielded fewer sentences, fewer morphemes, fewer words per sentence, and fewer complex sentences than his control. T.M.'s performance is suggestive of a deficit in expressive syntax. G.N.'s performance is within the normal range for his age.

Some differences were noted in communicative functions of the children's utterances. The subjects showed a similar rate of production of directives and projectives. T.M. produced fewer relationals but considerably more interpretatives than G.N. The largest single category of responses for both children was information statements. No behavior requests were produced by either child.

T.M. initiated fewer turns and responded to fewer of his partner's initiations. T.M. also produced fewer topic initiations than G.N. T.M.'s number of on-topic exchanges was considerably lower than that of his control. He also produced fewer utterances per turn than did G.N.

The children showed different response patterns to questions and statements with a few exceptions. The largest single category of productions by either child was choice responses to questions. T.M. produced far fewer clarification requests to questions and affirmative answers to yes-no questions.

Similar performances were observed between the two children in the number of communication breakdowns that were revealed in their samples. T.M. initiated a larger percentage of repair attempts than did his control. He used repetitions and contingent queries as his repair strategies. G.N. used contingent queries alone as his repair strategy.

Table 3-25. Subjects' Standard Scores on Auditory Perceptual Skills Test Battery

Auditory Subtest	Child	Raw Score	Age Equivalent	Percentile Rank	Interpretation
Discrimination Test	T.M.	79	4.1	<1	Low for C.A.
	G.N.	99	9.5	97	High for C.A.
Auditory Memory (Recognition)	T.M.	67	5.0	4	Low for C.A.
	G.N.	98	8.2	54	High for C.A.
Auditory Memory (Content)	T.M.	9	5.4	2	Low for C.A.
	G.N.	23	11.8	86	High for C.A.
Auditory Memory (Sequencing)	T.M.	28	6.0	16	Low for C.A.
	G.N.	53	11.6	94	High for C.A.

Table 3-26. Subject's Scores on Measures of Semantic and Syntactic Comprehension, Repetition, Metalinguistics, and Word-Finding

Name of Test	Child	Raw Score	Converted Score	Interpretation
PPVT	T.M.	67	Age=5.9	Below Normal Range
	G.N.	70	Age=6.0	Below Normal Range
TACL				
Word Classes	T.M.	34	N/A	
	G.N.	38	N/A	
Grammatical Morphemes	T.M.	33	N/A	
	G.N.	38	N/A	
Elaborated Sentences	T.M.	20	N/A	
	G.N.	38	N/A	
Total Score	T.M.	87	Age= 6.3	Below Normal Range
	G.N.	114	Age=6.11	Within Normal Range
TOLD				
Repetition	T.M.	14/30(47%)	Age=6.10	Below Normal Range
	G.N.	20/30(75%)	Age=8.6	Within Normal Range
WISC				
Similarities	T.M.	5	Age=6.10	Below Normal Range
	G.N.	6	Age=7.10	Within Normal Range
Token Test	T.M.	41	489,488	Below Normal Range
	G.N.	47	495,497	Within Normal Range
Word-Finding Test	T.M.	46	N/A	Slow/inaccurate namer
	G.N.	68	N/A	Slow/accurate namer

Table 3-27. Subjects' Frequency of Use on Standardized Measure of Lexical Diversity (The Word-Class Inventory for School-Aged Children)

Task/Activity	T.M.	G.N.	Mean	Range	Interpretation
Fifty Utterance Sample/ Total Words	228		348.9	278-421	Below Normal Range
		274	348.9	278-421	Below Normal Range
Fifty Utterance Sample/ Different Words	76		152	122-183	Below Normal Range
		108	152	122-183	Below Normal Range
Type-token ratio	3.56		5.75	5.17-6.31	Below Normal Range
		4.6	5.75	5.17-6.31	Below Normal Range

Table 3-28. Subjects' Frequency of Use on Measures of Lexical Diversity During Three Activities

		T.M.	G.N.
School:	Total Words	224	241
	Different Words	112	122
Art:	Total Words	191	313
	Different Words	60	92
Garden:	Total Words	51	94
	Different Words	37	86
Overall	Total Words	466	648
Overall	Different Words	209	300

Table 3-29. Subjects' Frequency of Use on Measures of Syntactic Production During Three Activities

Syntactic Performance	Child	Scores Obtained
Total Number of Sentences	T.M.	77
	G.N.	106
Total Number of Words	T.M.	424
	G.N.	679
Total Number of Morphemes	T.M.	447
	G.N.	726
Mean Number Words/Sentence	T.M.	5.5
	G.N.	6.4
Mean Number Morphemes/Sentence	T.M.	5.8
	G.N.	6.8
Word-Morpheme Index	T.M.	5.6
	G.N.	6.6
Assigned Linguistic Level	T.M.	V
	G.N.	VI
Number of Complex Sentences	T.M.	14
	G.N.	24
Proportion of Complex Sentences	T.M.	18%
	G.N.	23%

Table 3-30. Subjects' Percentage of Use of Tough's Communicative Functions During Three Activities

	T.M.	G.N.
Directive	46%	50%
Interpretative	44%	22%
Projective	1%	4%
Relational	7%	20%

Table 3-31. Subjects' Frequency and Percentage of Use of Behavior and Information Requests and Information Statements During Three Activities

Category	Frequency		Percentage	
	T.M.	G.N.	T.M.	G.N.
Behavior Request	0	0	0	0
Information Request	5	2	6	1
Information Statement	84	132	94	99

Table 3-32. Subjects' Frequency and Percentage of Use of Verbal Turn-Taking Measures During Three Activities

Measure	Absolute Frequency		Percentage	
	T.M.	G.N.	T.M.	G.N.
Child Initiations	23	38	19%	26%
Child Responses	63	89	68%	86%
Utterances/Turn	1.0	1.0	N/A	N/A

Table 3-33. Subjects' Frequency and Percentage of Use of Topic Manipulation Measures During Three Activities

Measure	Absolute Frequency		Percentage	
	T.M.	G.N.	T.M.	G.N.
Topic Initiations	4	12	4%	26%
On-Topic Exchanges	82	96	89%	98%
Mean Exchanges Per Topic	3.42	2.4	N/A	N/A

Table 3-34. Subjects' Frequency and Percentage of Use of Conversational Replies During Three Activities

Conversational Replies	Number		Percentage	
	T.M.	G.N.	T.M.	G.N.
Affirmatives/Yes-No Questions	3	16	4%	17%
Negatives/Yes-No Questions	2	1	3%	1%
Wh-Replacements/	0	0	0%	0%
Alternatives/Questions	1	6	1%	6%
Choice Responses/ Questions	47	43	60%	46%
Clarification Requests/ Questions	5	1	6%	1%
Repetition Requests/ Questions	0	0	0%	0%
Imitation/Questions	0	0	0%	0%
Affirmations/Statements	2	3	3%	3%
Compliance/Directives	9	13	12%	13%
Refusal/Denial/ Statements/Directives	0	3	0%	3%
Noncompliance/Directives	0	0	0%	0%
Alternatives/Statements/ Directives	0	0	0%	0%
Expansions	9	8	12%	9%
Clarification/Statement/ Directive	0	1	0%	1%
Repetition/Statement/ Directive	0	0	0%	0%
Imitation/Statement/ Directive	0	0	0%	0%

Table 3-35. Subjects' Frequency and Percentage of Communicative Breakdowns During Three Activities

Analysis of Breakdowns	Number		Percentage	
	T.M.	G.N.	T.M.	G.N.
Number of Breakdowns	5	4	6%	4%
Contingent Queries	4	1	80%	100%
Repetition/Questions	1	0	20%	0%
Repair Attempts/Child	4	1	80%	25%
Successful Attempts/ Child	4	1	100%	100%

Table 3-36. Subjects' Frequency and Percentage of Measures on the Barrier-Task Play

	T.M.	G.N.
Total number of turns required	62	54
Total number of missing referents	43	5
Total number of substitutions	0	1
Total number of deletions of descriptors	28	4
Total number of combined errors	72	10

Chapter Summary

Some interesting patterns of behavior were observed in the children's performances in several communicative tasks. With a few exceptions, the experimental subjects demonstrated much lower functioning than their controls on all norm-referenced measures.

A.D. (Case I) demonstrated similar performances to his control in auditory memory for recognition and auditory memory for content. In all other instances the experimental subjects exhibited lower functioning in the area of auditory perceptual skills. The most significant differences were observed in the Auditory Memory for Sequencing scores.

The subjects also achieved generally lower test scores than their controls on semantic and syntactic skills. This was evident in tasks that measured expressive language skills and in those that measured receptive language skills. Two of the three experimental subjects demonstrated markedly lower semantic comprehension scores than their controls.

In every instance the experimental subjects exhibited lower functioning in expressive syntax as measured by the sentence repetition task. No specific pattern was observed in the children's performance on the metalinguistic task. Two of the experimental children showed lower functioning than their controls. One of these experimental children scores, although lower than his controls', was within the normal range for his age. The third experimental subject showed a higher level of functioning in this area than did his control.

Two of the experimental subjects exhibited word-finding profiles of a slow and inaccurate namer. One of the experimental subjects did not achieve the required basal score for administration of the word-finding task and therefore, could not be compared to the other children on this measure. One of the controls represented a profile of a fast and accurate namer. Two of the controls represented a profile of a slow and accurate namer.

All of the children demonstrated normal structure and function of the oral speech mechanism. Differences were observed in the children's articulatory skills in one case. These differences were determined to be mild in degree and were responsible for only one communicative breakdown.

All of the experimental subjects in this study produced fewer total words and fewer different words than their controls. The experimental subjects and their controls demonstrated TTRs that were lower than the expected means for their ages. The experimental subjects' samples yielded lower TTRs than their controls'. The experimental subjects also produced fewer sentences, fewer morphemes, fewer different words, fewer words per sentence, and fewer complex sentences than their controls.

The experimental subjects also demonstrated differences from their controls in the communicative functions of their utterances. However, only one specific pattern of responses could be discerned across the cases. None of the children in this investigation produced any behavior requests.

The experimental subjects generally initiated fewer topics and turns than their controls. In instances where the experimental subjects initiated more topics and turns, they tended to produce fewer on-topic exchanges and did not respond as frequently to their partner's initiations.

The children produced similar conversational replies to questions and statements overall. No discernable patterns of differences occurred across cases.

Analysis of the experimental subject's samples revealed more communicative breakdowns than were seen in their controls' samples. The experimental subjects generally initiated fewer attempts to repair communicative failures than their controls. The experimental subjects also tended to use repetitions of the examiner's statements or questions in addition to contingent queries as their repair strategies while their controls almost exclusively used contingent queries.

Finally, the experimental children exhibited lower levels of functioning in presuppositional skills. They required more presuppositional turns and produced far more errors than their controls. The experimental subjects' errors were prevalent in the areas of reference and cohesion. The controls produced few errors of reference or cohesion. Their errors were generally deletions of descriptors.

CHAPTER IV
DISCUSSION

The purpose of this study was to conduct detailed analyses of the language abilities of school-aged children who had been identified as poor conversationalists, in an attempt to describe and isolate the specific pragmatic variables that were impaired. The researcher developed indepth profiles of children who had pragmatic disorders, in order to quantify and qualify the nature of pragmatic disorders and to examine pragmatics in relation to the other dimensions of language. The present investigation was comprised of three individual case studies. Each case study involved a language-impaired child and a language-normal child matched on the basis of nonverbal intelligence, chronological age, socioeconomic status and sex. The children ranged in age from 7 to 11 years.

Methods of Investigation

The degree of interjudge reliability obtained for the non-standardized measures suggests that the protocol employed in this investigation is suitable for experimental purposes and has potential value as a clinical tool. It was expected that the interrater reliability would be lower than the intrajudge reliability for several reasons. First of all, it possibly reflects the subtle nature of certain verbal and nonverbal aspects of conversational competence that do not translate easily from one person to another, one situation to another, or one medium (oral) to another (written). The researcher participated in the conversations with the children during the videotaped sessions. She also watched each videotape several times during the process of preparing the transcripts. Therefore, the researcher was able to rely on certain nuances of the specific interactions to assist her in making coding decisions about several of the children's utterances. The ASHA-certified speech-language pathologist who served as the second coder for this study did not have the benefit of interacting with any of the children. She relied only on the information provided her on the transcripts. Some coding variability is reasonable and to be expected in situations of this nature.

There were two basic data collection procedures, norm-referenced testing and language sampling. Thirteen norm-referenced tests were administered and scored by the researcher and one graduate-student clinician who had been engaged in several hours of pre-test training with the researcher. The researcher observed the graduate student during actual administration of all norm-referenced tests to one language-impaired child. During those sessions the graduate student conducted the test administrations exactly as she had been trained. The researcher rescored randomly selected subtests that had originally been scored by the graduate-student clinician. No scoring discrepancies were noted. All test scores were interpreted by the researcher. These procedures ensured consistent administration, scoring, and interpretation of test results for all of the children in the present study.

Eleven separate analyses were used to examine the communication samples of the children in this study. The procedures were selected to measure several aspects of expressive and receptive syntax, phonology, and pragmatics.

The children in this study conversed around three previously determined themes: school, art class, and planting a garden. A standard list of verbal prompts was used for each videotaped interaction. The researcher was the conversational partner for each child's taped session. The same ASHA-certified speech-language pathologist served as the additional participant during the Barrier Task-Play interaction with each child. These procedures helped to ensure standardization of the child-partner interactions.

Although standardization of the conversational interactions was necessary in order to form a basis for comparison of the children's performances, it also served to restrict several aspects of the children's conversational behaviors. Specifically, semantic diversity, topic manipulation, verbal turn-taking, and communicative functions were affected by the restricted format of the conversational sample. All of the experimental and control subjects in the present investigation achieved TTRs that were below the expected mean for their ages. Bennett and Alter (1985) suggested the following guidelines for interpretation of TTRs that are too low: 1) the child has a restricted referential semantic system; 2) limited conversational topics were available to the child; the language sample was constrained and may not be truly representative; 3) loss of the child's interest. It might be speculated that a more accurate representation of the children's TTRs might have been attained if an additional "free-play" activity had been added to the sampling procedures used in this investigation. One could also argue that the children might have initiated more verbal turns and conversational topics and demonstrated more diverse communicative functions if they had been allowed an opportunity to converse around topics of their own choosing and with different communicative partners (i.e. family members, peers).

No normative data exists for the interpretation of the subjects' performance on the pragmatic measures. The researcher's discussion of the children's abilities in this area is based on twenty years of clinical experience with language-impaired children and on her knowledge of the literature in pragmatic disabilities.

Subject Characteristics

Case Study One. A.D. was the language-impaired experimental subject of this study. R.A. was his language-normal control. A.D. is a high-functioning autistic child who is enrolled in the fifth grade in a regular public school classroom. However, his linguistic profile shows several deficit areas. He achieved scores within the normal range on only one of the norm-referenced measures.

A.D.'s auditory perceptual skills were considerably lower than his control's in every area (except recognition) and place him well below the fiftieth percentile in four auditory perceptual skills: discrimination, recognition memory, memory for content, and sequencing. A.D.'s performance on all other norm-referenced measures was also considerably lower than the expected mean for his age.

Scrutiny of A.D.'s language sample revealed overall low functioning in semantic, syntactic, and pragmatic skills. Marked differences were observed between his communicative performance and that of his control. This can best be demonstrated by examining both children's responses to the same question as demonstrated by the excerpts below.

Researcher: "WHO IS YOUR FAVORITE PERSON?"

A.D.: "I think I'm so glad it's gon be Mrs. Ric ... Richardson."

R.A.: "Well I met, I met him from Cub Scouts ... and um we were in Cub Scouts together and um ... we, I used to go to his house. I used to not go to his house but I used to play with him and everything and then I ended up in his class and his name is Gerald Mingo. And then ... and then we just had um ... been walk around ... been walking around and stuff. And then that's the only ... that's one of them but the rest of them I met at Cub Scouts and different places.

Researcher: "TELL ME WHAT YOUR SCHOOL LOOKS LIKE."

A.D.: "My school looks like windows."

Researcher: "Yeah, describe it for me."

A.D.: "Describe it? ... Describe it?"

Researcher: "Um Hum."

A.D.: "Hum ... I don't know."

R.A.: "Well, it's um ... red brick and um ... it has four wings on it. And uh ... the office would be the first thing you'd probably see and it's a little circle-like thing. And there's a playground to the side and then it's one row of classrooms which is kindergarten and then the next row is like second, third, kindergarten and the next wing is third, kindergarten and second, not kindergarten but first grade and second. And then um ... if you keep going down that same aisle you'll end up at the library and the next aisle over is the ... fourth and fifth grade wing and um, it's an auditorium and the lunchroom is on that wing, and the fourth and fifth grade classes. And the it's some portables there out, out in the playground area what you'd probably see. And then there's a big open playground.

Close scrutiny of A.D.'s language sample revealed that in many instances he tended to incorporate parts of his partner's last utterance into his own productions. This seems to be a communicative strategy he has adopted in order to be able to more clearly express his thoughts. It appears that A.D. is aware of his difficulty in language expression and uses repetitions and other strategies such as circumlocutions and "starter phrases" in an attempt to help him fulfill his role as a conversational participant.

A.D.'s performance in the area of semantic diversity was markedly different from his control's. A.D. produced far fewer words, fewer different words, and a lower TTR. His performance falls well below the range expected for a child his age. A.D. also demonstrated considerably lower skills in the area of syntactic complexity than did his control. He produced far fewer sentences, words, morphemes, words per sentence, and complex sentences than his control. A.D. presented the picture of a child who had limited ideas, conversed about a limited number of topics, and used language for a limited range of functions. A.D. displayed difficulties in dealing with subtle aspects of communication and rarely talked about abstract concepts. For example, he made no predictions, produced no statements that required guessing or imagining, and had difficulty talking about absent people, places, and things. His communicative performance was typical of that of a much younger child.

A.D.'s semantic and syntactic deficits were also evident in his use of stereotypical phrases and sentences and in his frequent preseverations. For example, he used the same phrase ("I love to ...") to begin eight of the 58 utterances produced during the garden task. Four of those utterances were the same sentence ("I love to eat dirt"). These productions were interspersed throughout the sample and were usually inappropriate in the context of immediate conversation. A.D. loved to participate in conversations but often experienced difficulties because of his poor semantic abilities. The stereotyped phrases and preseverations appeared to be topic maintenance strategies that A.D. had adopted in an effort to be a more successful communicator. These strategies were generally successful because they allowed him to continue a conversation around a central theme by changing only a few words in each new utterance.

The most significant differences in the subjects' responses to questions and statements occurred in the areas of clarification requests to questions and expansions of statements or directives. A.D. produced considerably more clarification requests and far fewer expansions of statements or directives than his control. The fact that A.D. produced so many clarification requests suggests the possibility that A.D.'s poor auditory perceptual skills and his deficits in semantic and syntactic comprehension may have resulted in an inability to encode linguistic information. It was obvious that A.D. responded more appropriately when the researcher simplified her utterances for him. It is possible that he produced fewer expansions of his partner's utterances because that would have required him to use levels of linguistic skills beyond his abilities. A.D.'s linguistic deficits were also reflected in his use of communicative functions and verbal turn-taking skills. He used more relationals, interpretatives and information requests but produced fewer directives, projectives, and information statements than did his control. A.D. initiated far fewer verbal turns, initiated fewer topics, and produced far fewer utterances per turn and on-topic exchanges.

Comparison of the subjects' communicative repair strategies was noteworthy. A.D. experienced more communicative breakdowns than his control. These breakdowns occurred when there were problems in the normal flow of conversation due to a lack of understanding on the part of the speaker and/or listener. Also, A.D. might have experienced more communicative breakdowns because of his poor auditory perceptual skills and his deficits in receptive semantics and syntax. It is possible that the researcher may have misunderstood some of A.D.'s utterances because he provided insufficient information and/or because of his unusual intonational pattern. His statements sometimes were mistaken for questions because of the tendency for his pitch to rise at the end of sentences. A.D. initiated fewer repair attempts when these breakdowns occurred. One could speculate that he simply did not know how to initiate such attempts. This explanation seems plausible because when A.D. did attempt to repair a communicative breakdown, he often used exact repetitions of his partner's utterances. Contingent queries were rarely used. Contingent queries are various types of questions that seek clarification of a previous utterance. They are different from exact repetitions of a partner's utterance because they require more language formulation skills. When using contingent queries the listener has to use a variety of direct and indirect strategies to elicit more information from the speaker. R.A. used contingent queries exclusively as his repair strategy.

A.D. also demonstrated significantly lower functioning in presuppositional skills than did his control. He required more presuppositional turns, had more missing referents, and produced several cohesion errors. This behavior also reflects A.D's low functioning in other aspects of language. He deleted referents and descriptors and substituted descriptors because his serious semantic deficit left him with an inability to select and/or produce the appropriate words.

In summary, A.D. demonstrated a linguistic profile that shows marked deficits in auditory perceptual skills, receptive and expressive semantics and syntax, and pragmatics. These deficits seriously impair his ability to conduct conversations in the manner that is expected of a child his age. A.D. exhibited low functioning in all areas of language. He appeared more advanced in the area of syntax because of the communicative strategies he used. These conversational strategies help him to function in everyday social interactions. His most frequently applied expressive language strategies seem to be stereotypical or "starter" phrases and repetitions of parts of his conversational partner's utterances. He also occasionally used circumlocutions.

A.D. showed weaknesses in several aspects of pragmatics. His major area of pragmatic deficit was topic manipulation. His ability to appropriately initiate, maintain and terminate topics was poor. However, his ingenuity in devising strategies to attempt to maintain conversations in view of his serious deficits in other areas of language might be considered a strength.

Case Two. B.N. was the language-impaired experimental subject of this study. D.J. was his language-normal control. B.N. demonstrated auditory perceptual skills that were below the expected range for his age. B.N. and his control exhibited similarly low levels of functioning on semantic and syntactic comprehension tasks. B.N.'s functioning in the area of expressive semantics and syntax was much lower than that of his control. He presented the word-finding profile of a slow and inaccurate namer.

B.N.'s performance in the area of semantic diversity was moderately different from his control's. B.N. produced far fewer total words and fewer different words than his control. B.N.'s number of total words, number of different words, and TTR fall below the range expected for a child his age. However, his control's number of different words and TTR values were also below the expected range for his age. B.N. demonstrated markedly lower skills in the area of syntactic complexity than did his control. He produced fewer sentences, fewer words per sentence, and fewer complex sentences. His linguistic picture is that of a child who had limited ideas (i.e. he tended to talk about concrete concepts and about things present in his immediate environment). This communicative behavior is a consequence of his semantics and syntactic deficits.

B.N. and his control demonstrated similar performances across categories in their responses to questions and statements. Both children produced their largest number of responses in the choice responses to questions category. Some differences were observed between B.N. and his control in the functions of their utterances. B.N. used less than half as many directives and relationals but more information statements and interpretatives. B.N.'s low use of directives and relationals was consistent with his overall pattern of conversational participation. Both of those categories of utterances require more interaction between conversational partners. B.N. tended to "talk to" his partner rather than "talk with" her. Information statements and interpretatives do not require as much "give and take" from each participant. Thus, he tended to produce more utterances in those categories.

B.N. initiated more turns and topics than his control but he responded to far fewer of his partner's initiations. The data show that he tended to stay on each topic for fewer turns than his control. B.N.'s sample revealed slightly fewer communicative breakdowns than his control's. However, he initiated no repair attempts. B.N.'s control initiated repair attempts on half of the breakdowns that occurred in his sample. B.N. participated in his partner's repair attempts by using exact repetitions. For example, when the examiner sought additional information from B.N., he would continue to repeat his same utterance until he was understood. He did not add new information or change his manner of presentation. Conversely, his control used contingent queries as his repair strategy.

B.N. required fewer presuppositional turns but produced considerably more errors than his control. B.N. produced far fewer referents and showed more cohesion errors than his control. This performance is related to B.N.'s poor skills in expressive semantics and syntax. He deleted and/or substituted words because he did not have access to the appropriate lexical items.

In summary, B.N. demonstrated a linguistic profile that shows deficits in auditory perceptual skills, expressive semantics and syntax, and pragmatics. These deficits are reflected in his poor conversational performance. Both B.N. and his control demonstrated semantic and syntactic comprehension skills that fall slightly below the normal range on most of the measures. Both B.N. and his control obtained similar scores on semantic and syntactic comprehension measures. B.N.'s control also obtained a low score on the metalinguistic measure. This suggests that B.N.'s control may possess an undiagnosed specific language impairment.

B.N. showed weaknesses in several aspects of pragmatics. His major pragmatic deficit was in the area of topic manipulation. Specifically, he maintained topics poorly. He initiated turns and topics more frequently than his control but responded to far fewer of his partner's initiations. As a result, B.N. presented the picture of a conversationalist who did not listen to his speech partner. He switched topics frequently giving the impression of one who was not really interested or involved in the on-going discussion.

B.N. spoke in a very soft voice and had to be frequently reminded to speak louder. His low vocal intensity often contributed to communicative breakdowns. Some of B.N.'s utterances were judged to be unintelligible and were not included in the transcript because of his inappropriately soft voice. An example from B.N.'s transcript illustrates his problems in the area of conversational performance.

Researcher: "Tell me how you wake up on time each morning."

B.N.: "At three."

Researcher: "At three. How do you make sure you will not be late for school?"

B.N.: (Twelve seconds elapse.) "Hear the bus."

Researcher: "Hear the bus? Okay, I'd like to know what goes on at your house when you wake up when you're getting ready to go to school. So I want you to start with when you wake up and tell me how you get dressed and everything that happens from the time you wake up until you get on the bus."

B.N.: "That's all I know."

Another excerpt from B.N.'s sample further illustrates his tendency to produce few utterances per turn and few on-topic exchanges and to switch topics frequently.

Researcher: "Now you sit there."

B.N.: "I'll get this." (Reaching for a watering can)

Researcher: "You're getting the water for me? That's nice. ... Have you ever planted a garden before?"

B.N.: "Yeah."

Researcher: "Yes, who ...

B.N.: (Interrupting) "Water gon come out there?" (Pointing to spout on watering can)

Researcher: "Yes when we get ready to water the plants ...

B.N.: (interrupting) "And then put some right there (Unintelligible).

Researcher: "Yes. That's right, use your big strong voice."

B.N.: "What is that?" (Pointing to a name tag on a plant)

Researcher: "That just tells you what kind of plant it is."

B.N.: "What kind that is?"

Researcher: It is a Vinca. It says Vinca ...

B.N.: "What that is?" (Pointing to another plant)

Researcher: Let me show you. ... Have you ever seen anything that looks like that before?

B.N.: "What is it?"

Researcher: "It looks like it's an onion. It is an onion. See the root? It's a little baby onion."

B.N.: "Pull it out?"

Researcher: "Yeah."

B.N.: I want to take ... give me one to go."

It is obvious in the above excerpt that B.N. initiated turns and topics but failed to remain on topics for more than one or two turns and did not often respond appropriately to his partner's utterances. Furthermore, B.N.'s partner was not able to provide elaboration on her utterances because B.N. interrupted and/or switched topics.

B.N.'s strength might be considered his assertiveness as a conversational partner.

Case Three. T.M. was the language-impaired experimental subject of this study. G.N. was his language-normal control. T.M. demonstrated auditory perceptual skills that were lower than the range of expectation for a child his age. He also showed deficits in semantic and syntactic comprehension. T.M.'s control obtained syntactic comprehension scores that were also slightly below the expected mean for his age. T.M. exhibited lower functioning in expressive syntax, metalinguistics, and word-finding than his control. His sample yielded fewer total words, fewer different words, fewer sentences, fewer words per sentence, and fewer complex sentences than his control. T.M. also had a mild phonological disorder that occasionally interfered with his ability to communicate effectively. The following excerpt from T.M.'s transcript shows how his phonological problem caused communicative breakdowns.

Participant: " ... Put the jacks where?"

T.M.: "In that ... that yitter (little) shuck (truck)."

T.M.: "The yitter (little) one ... (correcting the participant) that one right there (pointing) ... the yitter (little) one.

Participant: "They're both yellow."

T.M.: "The yit tel (little) truck.

Participant: "Oh, the little truck ... "

T.M. and G.N. showed similar response patterns to questions and statements with a few exceptions. The largest single category of productions by both children was choice responses to questions. T.M. produced far fewer clarification requests to questions and affirmative answers to yes-no questions. T.M. and his control also showed a similar rate of production of directives and projectives. T.M. produced fewer relationals but considerably more interpretatives than his control.

T.M. initiated fewer turns than his control and responded to fewer of his partner's initiations. He also produced fewer topic initiations, fewer on-topic exchanges, and fewer utterances per turn than his control. The following excerpt from T.M.'s sample illustrates his limited topic manipulation skills.

Researcher: " ... I want to know all about what happens at your house as you're getting ready for school in the mornings. I want you to start from the time you wake up and tell me everything that happens until you come to school."

T.M.: "Um ... The house be resting and ... um ... and my mom and dad be in the bed."

Researcher: "What else? And then what happens?"

T.M.: "My mom get up."

Researcher: "Uh hum."

T.M.: "And she fix my koze (clothes).

Researcher: "Anything else?" (T.M. shakes his head
indicating "no".)

It is apparent from the above excerpt that although T.M. usually made appropriate responses to his partner's utterances, he provided very little elaboration of details and contributed very little new information to the conversation.

Similar performances were observed between T.M. and his control in the number of communication breakdowns that were revealed in their samples. T.M. initiated a larger percentage of repair attempts than did his control. This is a very interesting phenomenon in view of the fact that he was generally a passive conversationalist. T.M. used repetitions of parts of his partner's previous utterance and contingent queries as his repair strategies. His control used contingent queries exclusively.

In summary, T.M. demonstrated a linguistic profile that shows deficits in auditory perceptual skills, expressive and receptive semantics and syntax, and pragmatics. T.M. presented the picture of a child who was generally responsive to his conversational partner. He did not however, tend to initiate conversational topics and turns. Most of his utterances were responses to specific questions from his partner. He provided very little elaboration of details and often neglected to provide adequate information to communicate clear messages to his partner. His utterances seldom added any new information to the conversational exchange.

T.M. showed weaknesses in several aspects of pragmatics. His major pragmatic deficit was in the area of topic manipulation. He did not demonstrate the ability to appropriately initiate, maintain, or terminate topics on a consistent basis. He assumed very little responsibility for facilitating on-going conversation. T.M.'s strength might be considered his tendency to initiate repair attempts when a communicative breakdown occurred.

Patterns Across Experimental Subjects

Some interesting patterns of behavior were observed in the performances of three experimental subjects on several communicative tasks. All three demonstrated much lower functioning than their controls on the auditory perceptual skills battery. The most marked differences occurred in the children's performances on the "sequencing" section.

The experimental subjects also achieved generally lower test scores than their controls on semantic and syntactic tasks. This behavior was evident on tasks that measured expressive language skills as well as those that measured receptive language skills. All of the experimental subjects in the present study produced fewer words, fewer sentences, fewer different words, shorter sentences, and fewer complex sentences than their controls.

None of the children obtained scores on the norm-referenced measure that indicated a serious deficit in the area of metalinguistics. A.D. and T.M.'s scores were generally lower than those of their controls. A.D.'s scores, however, were within the normal range for his age. B.N.'s metalinguistic scores were within the normal range but his control's were not. A.D. and T.M. initiated fewer topics and verbal turns than their controls. B.N. initiated more topics and verbal turns than his control but he also produced fewer on-topic exchanges and responded less often to his partner's utterances. He tended to switch topics frequently and to maintain topics poorly.

All of the experimental subjects used fewer directives, projectives, and information statements than their controls. They tended to use more information requests than their controls. None of the children used behavior requests. It is possible that the nature of the activities restricted the number and type of communicative functions exhibited by the children. For example, directives were usually only produced during the art task when the children were required to give directions to the researcher. Very few opportunities were available for the children to issue behavior requests.

The experimental subjects and their controls produced similar responses to questions and statements overall. All of the children produced far more responses in the "choice responses to questions" category. Although some differences were observed when comparisons were made between the children in each case study, no specific patterns of responses were discernable across cases.

In every case, experimental subjects' samples revealed more communicative breakdowns than in the samples of their controls. The experimental subjects also tended to use different communicative repair strategies than their controls. They frequently used repetitions of all or part of their partner's last utterance. Two of the three experimental subjects occasionally used contingent queries. The controls used contingent queries almost exclusively as a repair strategy.

A.D. and T.M. required far more presuppositional turns than their controls. B.N. required fewer turns than his control. One explanation for this phenomena is that D.J. (B.N.'s control) tended to stop after each subpart of his oral directions and wait for the participant to complete it before giving the rest of the directions. The following excerpt from D.J.'s transcript demonstrates this phenomenon.

D.J.: "You get the, get a red car." (He waits expectantly for the participant to pick up the red car.)

"And you get the yellow ... ah the yellow car, the orange car." (He waits for the participant to pick up the orange car.)

"And you put it in back of the big, the large truck." (He waits for the participant to pick up the large truck.)

"Get the pencil." (He waits for the participant to pick up the pencil.)

"And you stick it ... you stick it through the window."
(He waits for the participant to stick it through the window.)

"No, the back window." (He waits for the participant to change the pencil's position.)

"No, it go in the side." (He waits for the participant to make the adjustment.)

Participant: "What's that D.J.? Tell me again. Put it in the back window?"

D.J.: "Uh uh." (He shakes his head indicating no.)

Participant: "Which window?"

D.J.: "See, you put it back there. (Pointing) Put it here. Point towards that." (Pointing).

D.J. required nine turns to complete the above task but he exhibited only two errors (one missing referent and one deleted descriptor). Therefore, his proportionately large number of required turns was not the result of mistakes but seemed to be the consequence of the strategy D.J. used when giving directions to his partner. All of the experimental children produced considerably more errors than did their controls. Missing referents and deletion of descriptors were the most commonly occurring errors.

In summary, although this investigation was comprised of three individual case studies, several patterns of deficits were observed across cases. The experimental children demonstrated a clear pattern of deficits in certain auditory perceptual skills (discrimination, content memory, sequencing). They also exhibited lower functioning in several semantic and syntactic skills. Specifically, the experimental children always produced fewer total words, fewer different words, fewer sentences, shorter sentences, fewer morphemes, and fewer complex sentences. They also initiated fewer verbal turns and topics, produced fewer on-topic exchanges and fewer utterances per topic/turn, and produced more presuppositional errors.

Conversational Profiles

Fey (1986) identified four patterns of conversational participation in language-impaired children. Profile one, described as the "Unresponsive Communicator," includes children who are generally unresponsive in all types of social interactions relative to same-age normal-language children. Profile two, the "Responsive but Nonassertive" Communicator, includes children who are generally more responsive to their social partners than are the children in pattern one. However, they are less likely to initiate conversational exchanges than are their normal language peers.

Profile three, the " Unmotivated Communicator", describes the behavior of language-impaired children who assume the roles of both speaker-initiator and listener-respondent in a manner that is very similar to normal language children their own age. They do not, however, assume these roles in the same manner that is consistent with that of their peers. They are neither as assertive nor as responsive as children developing normally and they exhibit a reduction in motivation to interact verbally with their social partners. They rely on more nonverbal means of encoding. They also seem to be limited in specific linguistic forms required to produce certain speech acts, such as the assertion of rules.

Profile four, the "Assertive Communicator", includes language-impaired children who are active conversational participants. Assertive children are highly verbal and tend to make functional use of the limited linguistic skills that they possess.

None of the language-impaired children in this investigation showed a pure pragmatic deficit. All showed deficits in the three major domains of language (semantics, syntax, pragmatics); one showed deficits in phonology. The following discussion will attempt to differentiate among the language-deficient conversational profiles that each experimental subject exhibited.

The pragmatic profiles of the language-impaired children in this investigation will be discussed under three headings that are adaptations of Fey's (1986) classifications.

Overall Depressed Assertiveness and Responsiveness. Rapin (1982) described the language behavior of children displaying the semantic-pragmatic syndrome. She stated that these children typically have a striking difficulty possessing such sophisticated linguistic devices as embedded clauses, conditionals, and wh-question forms. According to Rapin, one can show that the deficit is linguistic functioning rather than cognitive functioning by reasking the child the question he could not answer in such a way that it requires a yes-no response and demonstrating in this way that he does know the answer. Rapin further stated that these children may repeat whole sentences verbatim or recite TV commercials and that while they often have no difficulty retrieving verbal labels for objects or pictures, they have an anomia in spontaneous speech. As a result, asserts Rapin, some of their words miss the mark despite the fact that they belong to the appropriate semantic field. Rapin concludes that this gives their speech a loose, tangential, or somewhat inappropriate quality and that their train of thought appears illogical and difficult to follow. Rapin reported that autistic children who acquire speech exhibit a communication deficit that resembles that of children with the semantic-pragmatic syndrome, with the notable exception that they are not as eager to communicate, have eye avoidance, and cannot interpret the nonverbal aspects of the communicative interaction. Some of these characteristics are reminiscent of A.D.'s profile.

A.D.'s performance on every measure of expressive and receptive semantics was well below what is expected for a child his age. A.D. exhibited lower functioning on at least two norm-referenced semantic tasks (receptive vocabulary and word-finding) than his younger language-impaired peers in this investigation. A.D.'s performance in the area of semantic diversity was markedly lower than his control's. A.D. produced far fewer words and far fewer different words. Much of A.D.'s problem in conversational performance seems to be directly related to his semantic deficit. His sentences were shorter and less complex. A.D.'s expressive syntax scores did not appear as low as they might have however, because of the communicative strategies he has adopted to help himself be better understood. No specific area of pragmatic deficit was identifiable in A.D.'s sample. His limited skills in the areas of expressive and receptive semantics seem to impact upon all pragmatic domains. An excerpt from his transcript will illustrate this fact.

Researcher: "Tell me how you make sure that you wake up every morning on time."

A.D.: "I know ... Hum ... How I wake up? Hum ... hum ... How you wake up?"

Researcher: "Yeah, tell me how you make sure you wake up on time every morning."

A.D.: "So you won't be late for school?"

Researcher: "Yeah. How do you wake up on time?"

A.D.: By, by getting up."

Researcher: "But how do you wake up on time?"

A.D.: "How you wake up on time?"

Researcher: "Um Hum."

A.D.: "So I won't have to worry bout being late, being late.

Researcher: "Yes, yes. How do you wake up on time so you won't be late?"

A.D.: "By putting own clothes on."

Researcher: "Okay. Does your mom wake you up?"

A.D.: "No."

Researcher: "Well, how do you know when it's time to get up?"

A.D. "When I finish watching t.v."

Another example will demonstrate A.D.'s use of circumlocutions and nonverbal cues to compensate for his inability to find the right words to express his thoughts.

Researcher: " ... How do I draw a house?"

A.D.: "By doing like this ... like drawing house by going like this ... doing like that. (Demonstrating with his finger)

A.D.'s behavior appears to be somewhat consistent with Fey's (1986) Pattern III child. He is neither as assertive or as responsive as his normal-language peer. He is limited in specific linguistic forms required to produce certain speech acts. He often relies on nonverbal acts (pointing, pantomiming) to help get his message across to his listener. He does not however, seem to lack the motivation to interact verbally with his social partners. His use of repetitions of his partner's utterances, stereotypical phrases, and circumlocutions reflect his attempts to participate in conversational interactions despite his limited semantic skills.

Assertive-Unresponsive Conversationalist. B.N. initiated more turns and topics than his control but responded to far fewer of his partner's initiations. B.N. often made inappropriate responses to his partner's utterances. These inappropriate responses frequently served to introduce new topics. He tended to stay on each topic for fewer turns than his control. The following excerpt is typical of B.N.'s conversational participation:

Researcher: " ... That one fell. How are you going to make it stay?"

(B.N. said nothing but set the plant upright.)

Researcher: "Okay, very good. That looks great."

B.N.: "What that (unintelligible from tape) is?"

Researcher: "That's a kind of vegetable. How long do you think it will be before we can eat those vegetables?"

B.N.: "Bout high as the school?"

Researcher: "High as the school."

B.N.: "Uh huh."

Researcher: "My goodness ... "

B.N.: "I wanna take this out."

Researcher: "You want to take one of these out too?"

B.N.: "Yeah."

Researcher: "Okay."

Researcher: "Oh! Oops, that fell."

Researcher: "How are you going to make sure they don't fall down?"

B.N.: (Unintelligible)

Researcher: "Oh, that's ... "

B.N.: (Unintelligible)

Researcher: "They may fall down. How're you going to make sure they don't fall?"

B.N.: "Keep them over there."

The above excerpt shows that B.N. had a tendency to interrupt his conversational partner with a question or statement about a new topic. The researcher asked the same question three times without receiving an adequate answer. B.N. appears to represent the Pattern One language-impaired child in Fey's (1986) classification. He was generally less unresponsive in all types of social interactions than the other children in this investigation. B.N. seldom made more than one or two responses to his partner per topic. Thus, it was difficult for his partner to maintain conversation around a chosen theme. B.N. was not passive in conversational interactions. His contributions however, did not conform to several of Grice's (1975) conversational principles. For example, B.N.'s contributions were inappropriate to the situation and/or context and did not provide sufficient information. His frequent shifts of conversational topics are likely to result in his being perceived as impolite by some conversational partners.

Nonassertive-Responsive Conversationalist. T.M. seems to fit Fey's (1986) description of responsive but unassertive children. T.M. was generally more responsive to his social partner than either of the other experimental children in this investigation. T.M. however, was less likely to initiate conversational exchanges than his normal language peers. T.M. usually responded to his conversational partner using short phrases and/or sentences and nonverbal acts. He seldom provided elaboration of details unless he was responding to specific requests. The following excerpt demonstrates T.M.'s typical pattern of conversation.

Researcher: " ... Tell me how you make sure that you wake up on time in the mornings."

T.M.: "I just yook (look) out of the window."

Researcher: "You just look out of the window? Okay, what time do you have to be at school?

T.M.: "Before eight o'cock (o'clock)."

Researcher: "Okay, how do you make sure that you won't be late?"

T.M.: "I yook (look) at the clock."

Researcher: "Look at the clock? Okay ... I want you to start from the time you wake up and tell me everything that happens until you come to school."

T.M.: "Um ... The house be resting and ... um ... and my mom and dad be in the bed."

Researcher: "What else? And then what happens?"

T.M.: "My mom get up."

Researcher: "Uh hum."

T.M.: "And she fix my coze (clothes)."

Researcher: "Anything else?" (T.M. shakes his head.)

Researcher: "Okay, do you eat breakfast in the mornings?"
(T.M. nods his head.)

Researcher: "What do you like to eat for breakfast?"

T.M.: "Pancakes and eggs and biscuits and bacon."

Researcher: "Oh that sounds good. How do you get to school each day?

T.M.: "Walk."

Researcher: "Do you live near here.?" (T.M. nods.)

Researcher: "Tell me how to get to your house."

T.M.: "Right over ... the apartments over there."
(Pointing out of the window).

Researcher: "Oh, that's very close isn't it?" (T.M. nods.)

Are Pragmatic Deficits Dissociable from Other Dimensions of Language?

No literature has shown unequivocal empirical evidence of an isolated pragmatic deficit. The closest to such evidence is found in the Blank et al. (1979) study. However, the subject in that study showed generally low functioning on the semantic-syntactic measure used. Blank, Gessner, and Esposito (1979) studied two major aspects of the language behavior of a 3.3 year-old child, semantic-syntactic and socio-interpersonal. The subject's structural analysis placed him between the tenth and twenty-fifth percentile of normal middle class children. Blank, et al. concluded that although this performance was towards the lower end, it was still within the range of his peers.

The subject in the study by Blank et al. had shown little or no interest or skill in preverbal communication, experienced trouble comprehending the simplest meaning of preverbal communication, and used language in "symbolic play" situations rather than as requests to meet needs, gain attention, or assert independence like other children. The writers concluded that their subject exhibited near-normal development in the conceptual realm and almost non-existent development in the communicative realm. However, this conclusion must be questioned because no standardized measures were used and because of the lack of comprehensive assessment.

Several differences exist between the present investigation and Blank et al.'s study. First of all, this study involved a more extensive examination of language behavior. Blank et al. used two measures of language performance. The present investigation involved the use of thirteen norm-referenced tests and eleven non-standardized analyses for each child in the study. This allowed for a more thorough investigation of the multiple dimensions of language performance.

Secondly, although this investigation used a case study approach, it consisted of observations of more than just one child. This study compared the language abilities of language-impaired children with those of language-normal peers from similar backgrounds. Therefore, the researcher was able to use the results obtained by the language-normal peer as a standard for comparison for each language-impaired subject. This provided an opportunity to develop a more ecologically-based profile of linguistic deficits or communicative irregularities than would have been possible from a description of one child's behavior.

Thirdly, all of the subjects in the present investigation were older than the subject in the study by Blank et al.. That allowed for an examination of the communicative skills of children who were demonstrating more advanced aspects of communicative performance than three-year-olds who are still developing several aspects of language behavior.

The present investigation also produced different results than did the Blank et al. (1979) study. All of the experimental subjects in this study showed multi-dimensional language deficits, so no evidence was found for an isolated pragmatic deficit. Each of the subjects showed different areas of strengths and weaknesses within pragmatic dimensions of language. These strengths and weaknesses are presented in Table 4-1. This underscores the importance of a comprehensive investigation of pragmatic skills.

Table 4-1. Comparison of Subjects' Linguistic Strengths and Weaknesses

	A.D.	B.N.	T.M.
Auditory Discrimination	+	+	-
Auditory Recognition Memory	+	-	-
Auditory Content Memory	-	-	-
Auditory Sequential Memory	+	+	+
Receptive Semantics	-	-	+
Expressive Semantics	-	-	-
Semantic Diversity	-	-	-
Receptive Syntax	-	+	+
Expressive Syntax	-	-	+
Repetition	+	+	+
Communicative Functions	-	-	+
Verbal Turn-Taking	-	+	-
Topic Initiation	-	+	-
Topic Maintenance	+	-	+
Conversational Replies	+	-	+
Presupposition	-	+	+
Assertiveness	-	+	-
Responsiveness	+	-	+

The results of the present investigation suggest that impaired pragmatics might not typically occur as an isolated language deficit area. There seems to be a very strong correlation between expressive and receptive semantic abilities and several aspects of pragmatics (communicative functions, presupposition, topic initiation, assertiveness).

The present study has shown that children who do not have access to a wide range of lexical items tend to demonstrate restricted use of language. They do not usually talk as much as their peers but even when they do they tend to talk more about things that are concrete and/or present in the immediate environment. They also are less likely to exhibit communicative behaviors that require more advanced linguistic functioning (projecting, imagining, teasing, expanding, reasoning).

There also appears to be a relationship between auditory perceptual skills and children's use of clarification requests in response to their partner's statements and questions. The subjects in this study who showed deficits in auditory perceptual skills made more clarification requests than their controls. This suggests the possibility of a deficit in the ability to encode linguistic information which may contribute to communicative breakdowns.

Pragmatic Deficits: Autism Versus Non-autistic Syndrome

Several researchers have described the speech and language characteristics of autistic children. Koegel, Rincover, and Egel (1982) stated that many autistic children are mute and that others may show echolalia. For example, they reported that a child may repeat numerous phrases or conversations previously heard without indication that the words convey meaning. The writers further stated that immature grammar, pronoun reversals, and/or the inability to use abstract terms may also be apparent. Fay (1980) pointed out that while elaborate speech is sometimes produced by autistic children, that speech often fails entirely as a vehicle for conveying meaning. Instead, Fay speculated, it appears to be an automatic phenomenon or a goal in itself.

Controversy exists concerning the use of echolalia by language-impaired children. Echolalia is generally defined as the meaningless repetition of a word or word group just spoken by another person. In his discussion, Fay (1980) discusses echolalia as an audiovocal behavior void of language and communicative intent. More recently however, researchers (Prizant and Dunchan, 1981; Prizant & Rydell, 1984) have documented that echolalia may serve a range of communicative functions for the user.

Two major types of echolalia are usually discussed. Immediate echolalia is the repetition of an utterance that occurred just prior to the child's utterance. Delayed echolalia is the repetition of an utterance that occurred at some earlier time. The earlier time could have been days or even weeks or months before. According to Fay (1980), it is the repetition of stored, usually echoic, utterances in new and usually inappropriate contexts. Fay further explained however, that delayed echoes can be and are used as a communicative device by some children who associate a phrase and situation instrumentally and then recreate the favored situation by repeating the stored verbal signal. He cited Furneaux (1966) who wrote of an autistic girl who asked, "Do you want to go in the garden?" as an indication of her desire to do so at that time.

The autistic child in this investigation (A.D.) exhibited instances of immediate and delayed echolalia. His echolalia did serve certain communicative purposes. For example, he often used exact repetitions of his partner's last utterance as a repair strategy when communicative breakdowns occurred. Additionally, he used repetitions of parts of his partner's previous utterances over several turns as he attempted to communicate his own ideas. Although both of the other language-impaired children occasionally used repetitions as a repair strategy, A.D. used the strategy all of the time. None of the other language-impaired children in the study used delayed repetitions of their partners' utterances as a communicative tool.

Fay (1980) also discussed the peculiar attributes of voice quality and intonation demonstrated by autistic children. According to Fay, one frequently noted vocal characteristic is that of consistent high pitch. Other vocal idiosyncrasies he discussed included hoarseness, harshness, hypernasality, abnormal loudness levels, and monotony. A.D. exhibited normal voice quality but his pitch and intonational patterns were occasionally unusual. His vocal behavior sometimes resulted in his statements being interpreted as questions. None of the other children in the present study showed similar vocal behavior.

Another characteristic of the language of autistic children that has been addressed is inappropriate use of deictic terms, specifically personal pronouns. A.D. showed problems in this area but only when repeating his partner's utterances. For example, when he was asked, "What is the first thing you do when you get to school", he responded with "What is the first thing you do when you get to school." Thus, it is obvious that in his exact repetitions he made no changes in the personal pronouns used. Although A.D. did not demonstrate a consistent problem with pronoun reversals in the sample, informal observations by this researcher have revealed that he does have problems in that area. None of the other children in the study showed similar behavior.

Fay (1980) discussed Ricks and Wing's (1975) conclusion that autistic children seem limited in the use of nonverbal as well as verbal means of communication. Ricks and Wing believed that neither gestures and facial expressions nor head nods, "uh-hums, and smiles are used by autistic children to support a conversational exchange. A.D. used all of these types of behaviors in his conversational interactions.

Fay (1980) stated that, in cases of autism, not all speech and vocalizations qualify as communicative; many are of a self-stimulatory nature. According to Fay, those utterances that are communicative consist largely of concrete requests and that nonverbal behaviors often fail to serve communicative functions, or do so in a limited, stereotyped manner. A.D. exhibited preseverative behavior when he inappropriately and continuously production of the statement "I love to eat dirt." This may have been a self-stimulatory behavior. Although there were few opportunities to document this type of behavior during the samples used in this investigation, the researcher has observed A.D. spontaneously reciting entire television commercials in informal settings. A.D. also tended to repeatedly hum the same melody and engage in other verbal behaviors that may have been self-stimulatory. A.D. showed a disporportionately large number of stereotyped phrases. In addition, he participated in some nonverbal behaviors (tapping on the table while the researcher was talking, fiddling with various items while he was talking) that were distracting and may have interfered with his ability to appropriately respond to his partner or to maintain a topic.

Relationship of Findings to Previous Research

Research efforts in the area of child language development and disorders has focused on investigating developmental etiologies. These investigations have produced volumes of information about the nature of child language and certain impairments of language. However, because of the diversity among children with developmental language disorders, these studies have not resulted in generally accepted classification systems. Rapin (1982) discussed five tentative clinical syndromes exhibited by preschool children with language disorders. One of these syndromes was demonstrated by one experimental subject in the present investigation. No previous research has investigated the multiple dimensions of pragmatics in language-impaired children. Previous studies have looked at isolated aspects of pragmatics (i.e., conversational repairs, presupposition, communicative functions). Therefore prior to this study, we did not have information regarding the linguistic strengths and weaknesses in this group of children. Furthermore, we did not know if pragmatic deficits occur in isolation, in conjunction with other deficits or in variable patterns. Prutting and Kirchner (1987) concluded that there is a need to develop comprehensive communicative profiles of language-impaired children with primary pragmatic deficits.

This investigation resulted in the development of linguistic profiles of language-impaired children with deficits in the pragmatic domain of language. In contrast to previous research which had focused on selected aspects of pragmatics, the present study examined all domains of language. The current findings provide important information that helps to further enlighten us about the true nature of a pragmatic disorder. Until now we have had to function somewhat like the blind men touching parts of an elephant. We had some understanding about the parts of the pragmatic puzzle that we had touched but some of the major pieces of the puzzle were missing. This investigation has helped us discover some of the important missing pieces. For example, we have shown that there are different patterns of pragmatic deficits and that a child can have a pragmatic deficit in specific areas but not in others. Additionally, we have raised the possibility that pragmatic deficits may not occur in isolation except in extreme cases (i.e., secondary to an emotional disorder like in abused children). This researcher has seen what appeared to be a purely pragmatic disorder in informal observations of an abused three-year-old whose semantic-syntactic skills were essentially within the normal range for her age. We also know that weaknesses in the other domains of language (phonology, semantics, syntax) may contribute to the perceived severity of the pragmatic disorder. We know that children may demonstrate different conversational skills in varying communicative settings.

The results of this research suggests that not only is it important to examine pragmatic skills in the context of overall communicative abilities, but that researchers should employ a variety of eliciting strategies and involve the subjects in different activities/settings while collecting language samples for analysis. Although a few of the puzzle pieces are still missing, we now have a much clearer picture of pragmatic disorders. Additionally, this investigation has developed methodologies that may be useful for assessing pragmatic disorders in language-impaired children. The protocol used in this investigation provides a systematic means for assessing all domains of language while doing an in-depth evaluation of several aspects of communicative performance.

This investigation also compared the pragmatic performance of an autistic child to two language-impaired nonautistic children. This study showed that the autistic child in this study (A.D.) did not fit neatly into either of Fey's (1986) classifications. His profile was most representative of the child in pattern three who was both a speaker-initiator and a listener-respondent but did not assume these roles in the same manner that is consistent with his peers. He did not however, exhibit one of the major characteristics of this pattern. According to Fey, the child in this pattern exhibits a reduction in motivation to interact verbally with their social partners. The autistic child in this study seemed to be very motivated to engage in conversational interactions. This is supported by his clever use of a variety of communicative strategies in order to participate in conversations. This child showed many of the characteristics of the child with a semantic-pragmatic syndrome described by Rapin (1982).

Implications for Future Research

This study provides important preliminary data about the linguistic profiles of language-impaired children with a primary deficit in the area of pragmatics. The present investigation involved a small sample of children. Further investigations, using the protocol developed in this study, are necessary to determine if these linguistic patterns are repeated and if other patterns exist.

Due to the tremendous amount of analysis involved in this protocol, it might be reasonable to assume that future studies will continue to use small Ns. The results of these small N studies may be combined at some future date in order to confirm that the profiles are truly representative of the general population of pragmatically disordered children.

Future studies should include a "free-play" segment in order to allow the children opportunities to talk about things that interest them. The addition of this segment should provide more representative data about the subjects' normal communicative participation in everyday situations. At least, the data from the "free-play" segment may be compared with the data from the other segments to determine if there is a difference. Future studies should also seek to determine how language-impaired children differ from on conversational partner to another. For example, the study might pair the experimental child with a stranger, a familiar adult, a same-age normal-language child, and a younger normal language-child. Other studies should focus on the relationship between the identification of specific linguistic deficits in pragmatically disordered children and subsequent language intervention. For example, once the specific deficits are identified in these children, the researcher might develop a program specifically designed to provide the linguistic skills and/or communicative tools needed to help the children become more effective conversationalists.

Additional studies are needed to develop more information about the types of profiles presented by language-impaired children with a primary deficit in the area of pragmatics. Three different patterns were discovered in the present investigation. Other patterns may develop as additional language-impaired children with primary deficits in the area of pragmatic are studied. Future studies should also seek to develop a classification scheme for pragmatic disorders.

APPENDIX A
PROMPTS/TOYS FOR SCRIPT-RELATED PLAY

Elicited Schemes Play

1. Do you dress yourself for school or does your mother help you?
2. Do uou select what you want to wear each day?
3. Do you prepare your clothes the night before school or the morning of school?
4. Tell me how you make sure you wake up on time each morning.
5. Tell me how you get dressed for school in the mornings. Start with the time you wake up and tell me everything.
6. Do you eat breakfast?
7. Tell me all about your breakfast time.
8. Tell me how you get to school each day.
9. What is the first thing you do when you get to school?
10. Tell me the names of your teachers and what they teach you.
11. Tell me what you like best about school.
12. Why is that your favorite activity?
13. Tell me about the person you like best at school.

14. Describe your school for me.
15. Tell me how you get home from school each day.

Art Class Activity

1. Do you have an art class at your school?
2. I did not have an art class at my school when I was a little girl. I would like to pretend that I am in an art class now. You will have to tell me what to do, so you can be the teacher. I will be the student. I want to paint a picture of a house with flowers in the yard. What must I do first?
3. Am I doing this right?
4. What do I do now?
5. Why do I have to do it this way?
6. What colors should I choose?
7. Tell me when I leave something out.
8. How long will it take to finish this?

Planting a Garden

1. Now I would like to plant a garden. Do you have a garden at your house? Have you ever seen one?
2. Tell me about the things that grow in a garden.
3. We will put seeds and small plants in our garden. What do you want to do first?
4. Did we forget to do anything?

5. How long do you think it will be before these vegetables will be ready to eat?

Toys/materials Used for Play Activities

ART: script of verbal prompts

large sheets of poster boards and art paper

assorted colored felt markers

PLANTING A GARDEN:

window sill planter boxes filled with dirt

seeds

toy spades

beach pail with dirt

small plants

water pails with water

script of verbal prompts

BARRIER TASK:

small figurines

stick of gum

toy cars and trucks

small yellow plate

butterscotch mint

peppermint candy

napkin

clear plastic cup

small plastic bowl with lid

small toy shampoo bottle

small paper cup

small red plastic bowl

white plastic plate

long yellow pencil

toy brush and comb

toy jacks in green vinyl case

small rubber balls

script of verbal prompts

NOTE: Two identical items were used in this task.

APPENDIX B
OVERALL SUMMARY OF SAMPLING TECHNIQUES

NAME: ______________________________

COMMUNICATIVE FUNCTIONS	SCHOOL	ART	GARDEN	TOTAL
Behavior Requests				
Information Requests				
Information Statements				
Directives				
Interpretatives				
Projectives				
Relationals				
VERBAL TURN-TAKING				
Child Initiations				
Partner Initiations				
Proportion/Child Initiations				
Child Responses				
Partner Responses				
Proportion/Child Responses				
TOPIC MANIPULATION				
Child Initiations/Topic				
Partner Initiations/Topic				
Proportion/Child Initiations				
On-Topic Exchanges/Child				
On-Topic Exchanges/Partner				
Proportion/Child Exchanges				
Topics Per Minute				
CONVERSATIONAL REPLIES				
Affirmatives/Yes-No Questions				
Negatives/Yes-No Questions				
Wh-Replacements/Questions				
Alternatives/Questions				
Choice Responses/Questions				
Clarification Requests/ Questions				

APPENDIX C
WORKSHEET: SAMPLING TECHNIQUES

Name: ____________________
Task: ____________________

COMMUNICATIVE FUNCTIONS

Behavior requests _____
Information requests _____
Information statements _____
Directives _____
Interpretatives _____
Projectives _____
Relationals _____
responses/questions_____

TURN-TAKING

Initiations by child ___

Initiations by partner ___
Proportion of initiations
by child ___

Responses by child ___
Responses by partner ___
Proportion of responses
child ____
statements/directives___

TOPIC MANIPULATION

Topics initiated by child ___
Topics initiated by partner ___
Proportion of topics initiated
by child ____
On-topic exchanges by child ____
On-topic exchanges by partner ___

CONVERSATIONAL REPLIES

Affirmatives to yes-no
questions ____
Negatives to yes-no
questions _____
Wh-replacements ____
Alternatives/questions __
Choice

Clarification requests __

Repetition requests ____
Imitation of questions __

Affirmation of statements
Compliance/directives ___
Refusals/denials of
statements/directives ___

Noncompliance/directive__
Alternatives to by
statements/directives
by child ____
Expansions ____
Clarification of
statements/directives ___
Repetition of statements
or directives ___
Imitation of statements__
Imitation of directives__

SYNTACTIC COMPLEXITY

Word-Morpheme Index ____
Assigned Level (LSAT) ___
Complex sentences ____
Total sentences ____
Proportion of complex
sentences ____

Proportion of topics maintained or matched ___
Topics per minute ___

COMMUNICATIVE REPAIRS
Contingent queries ___
Repetitions ___
Child initiated repair attempts ___
Successful child initiated repair attempts ___

SEMANTIC DIVERSITY
Different words ___
Total words ___
Overall TTR ___

APPENDIX D
SUMMARY OF NORM-REFERENCED TESTING

NAME: ______________________________

SPEECH TO LANGUAGE SEGMENT

Hearing Acuity: Passed_____ Failed_____
Auditory Skills Profile:
    Auditory Attention _____ Percentile
    Auditory Discrimination _____ Percentile
    Auditory Memory _____ Percentile
    Auditory Sequencing _____ Percentile

LANGUAGE TO THOUGHT TO LANGUAGE

Semantic Comprehension Age Equivalent _____
Syntactic Comprehension Age Equivalent _____ (Mean)
    Word Classes _____
    Grammatical Morphemes _____
    Elaborated Sentences _____
Sentence Repetition Score _____/30 = _____Percent
Metalinguistics:
    Similarities _____
    Vocabulary _____
    Comprehension _____
Word-Finding Profile _____ Percentile
Token Test Overall Scale Score Age_____ Grade_____

LANGUAGE TO SPEECH

Speech Programming: Passed_____ Failed_____
Articulation: Passed_____ Failed_____
Phonology: Passed_____ Failed_____

APPENDIX E
PARENT CONSENT FORM

Date:

Dear ---------------------------------------:

I am a graduate student in the Department of Speech at the University of Florida. I am studying language development in children and would like for your child to participate in this study.

If your child participates, I will be giving your child a hearing test and some language tests. These tests will require your child to perform several different tasks. It will take approximately four hours to complete the tasks, so I would like to work with your child on four different days.

I will be videotaping one of your child's testing sessions. The information on these tapes will be confidential. Only I and one other speech-language clinician will see your child's tape. If your child's performance on these tasks is discussed in any papers or presentations, your child will remain totally anonymous. I do not anticipate any risks to your child as a result of participation in this study. Your child is free to withdraw from this project at any time.

It will also be necessary for me to examine your child's school records as a part of this project. The information gained from the folders will be held strictly confidential. If any of this information is discussed in any papers or presentations, your child will remain totally anonymous. Your child will not be paid to participate in this project. If you have any questions at any time before, after, or during this project please feel free to call Thalia Coleman at 376-6820 or 392-2041.

I have read and understand the procedure described above. I agree to allow my child to participate in the procedure and I have a copy of this description.

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Parent	Date	Second Parent	Date
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Supervisor	Date	Principal Investigator	Date

APPENDIX F
BARRIER TASK ANALYSIS

Name: ________________________

Item # 1
# turns per task _____
Qualitative error analysis:

_____ missing referents
_____ substitutions
_____ deletion of descriptors

_____ pantomimes

Item # 2
# turns per task _____
Qualitative error analysis:

_____ missing referents
_____ substitutions
_____ deletion of descriptors

_____ pantomimes

Item # 3
# turns per task _____
Qualitative error analysis:

_____ missing referents
_____ substitutions
_____ deletion of descriptors

_____ pantomimes

Item # 4
# turns per task _____
Qualitative error analysis:

_____ missing referents
_____ substitutions
_____ deletion of descriptors

_____ pantomimes

Item # 7
# turns per task _____
Qualitative error analysis:
_____ missing referents
_____ substitutions
_____ deletion of descriptors
_____ pantomimes

Item # 8
# turns per task _____
Qualitative error analysis:
_____ missing referents
_____ substitutions
_____ deletion of descriptors
_____ pantomimes

Item # 9
# turns per task _____
Qualitative error analysis:
_____ missing referents
_____ substitutions
_____ deletion of descriptors
_____ pantomimes

Item # 10
# turns per task _____
Qualitative error analysis:
_____ missing referents
_____ substitutions
_____ deletion of descriptors
_____ pantomimes

Item # 5
# turns per task _____
Qualitative error analysis:

_____ missing referents
_____ substitutions
_____ deletion of descriptors

_____ pantomimes

Item # 11
# turns per task _____
Qualitative error analysis:
_____ missing referents
_____ substitutions
_____ deletion of descriptors
_____ pantomimes

Item # 6
# turns per task _____
Qualiitative error analysis:

_____ missing referents
_____ substitutions
_____ deletion of descriptors

_____ pantomimes

Item # 12
# turns per task _____
Qualitative error analysis:
_____ missing referents
_____ substitutions
_____ deletion of descriptors
_____ pantomimes

Item # 13
# turns per task _____
Qualitative error analysis:
_____ missing referents
_____ substitutions
_____ deletion of descriptors
_____ pantomimes

Item # 14
# turns per task _____
Qualiitative error analysis:
_____ missing referents
_____ substitutions
_____ deletion of descriptors
_____ pantomimes

Item # 15
# turns per task _____
_____ missing referents
_____ substitutions
_____ deletion of descriptors
_____ pantomimes

OVERALL SUMMARY
Total number of turns ____
Total missing referents __
Total substitutions _____
Total deletions of descriptors ____
Total pantomimes ____

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BIOGRAPHICAL SKETCH

Thalia J. Coleman is the oldest of seven living children born to Rudolph and Lily Mae Ford Coleman. She graduated from Columbus High School, Lake View, South Carolina, in June 1966. Thalia reigned as Miss Columbus High School for the 1965-66 school term and graduated as valedictorian of her class. In addition to being a National Merit Scholar Finalist, she was the recipient of numerous honors and awards for her participation in academic and extracurricular activities.

Miss Coleman began her undergraduate studies at South Carolina State College in Orangeburg, South Carolina, during the fall semester of 1966. While in college, Thalia majored in speech correction with a minor in psychology. She held major offices in many professional and social clubs and organizations. She also won several scholarships for her academic accomplishments as well as various trophies and awards for extracurricular activities. Among her most prized possessions is the 1969 Best Actress Trophy for her performances with the college's internationally acclaimed Henderson-Davis Players. Thalia received the Bachelor of Arts in speech correction from South Carolina State College in 1970. She completed a six-week internship at the Coastal Habilitation Center in Ladson, South Carolina, during the summer of 1970. The staff was very impressed with her performance as a student intern and created a special position for her for the rest of the summer; so her first professional position was as a speech therapist at the Coastal Center.

Thalia was awarded a fellowship from the Rehabilitation Services Administration to engage in graduate studies in speech pathology at the Pennsylvania State University. She began her studies there in the fall of 1970. After completing a semester-long internship at the Laurelton State School and Hospital in Pennsylvania, she received the Master of Science degree in speech pathology and audiology in September, 1971.

Miss Coleman's Clinical Fellowship Year was completed as an instructor/speech clinician at South Carolina State College. She received tenure and was promoted to the rank of Assistant Professor in 1975. During her career at South Carolina State College she has performed many roles including Coordinator of Directed Teaching in Speech Pathology; the administrative supervisor of the Speech, Language, and Hearing Clinic; a member of the Graduate Faculty; long-term member of the college's Admissions Committee, faculty advisor of the Speech Pathology Club and Zeta Phi Beta sorority, and a member of several other departmental and college-wide committees.

Thalia is also very active in many church and civic organizations. At Faith Tabernacle Deliverance Temple in Orangeburg, she has served for many years as chair of the hospitality committee, manager of the book store, treasurer of the Sunday School, teacher of the adult bible class, a member of the central planning committee, assistant to the business manager, a member of the journal committee, and a member of the mass choir. She is a certified senior partner with the Orangeburg County Senior Partner Program for juvenile delinquents.

Miss Coleman has an intense love of teaching and has agreed to return to South Carolina State College as an associate professor of speech-language pathology. She plans to conduct research on language development and disorders in children from rural backgrounds.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Linda J. Lombardino

Dr. Linda J. Lombardino, Chairman
Associate Professor of Speech

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Thomas B. Abbott

Dr. Thomas B. Abbott
Professor of Speech

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Vivian I. Correa

Dr. Vivian I. Correa
Associate Professor of Special Education

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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Assistant Professor of Speech

This dissertation was submitted to the Graduate Faculty of the Department of Speech in the College of Liberal Arts and Sciences and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

December, 1988

Dean, Graduate School

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